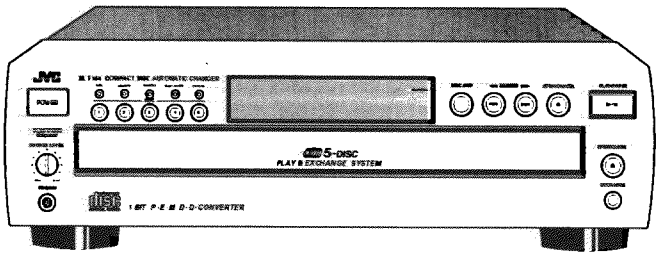
JVC

SERVICE MANUAL

COMPACT DISC AUTOMATIC CHANGER

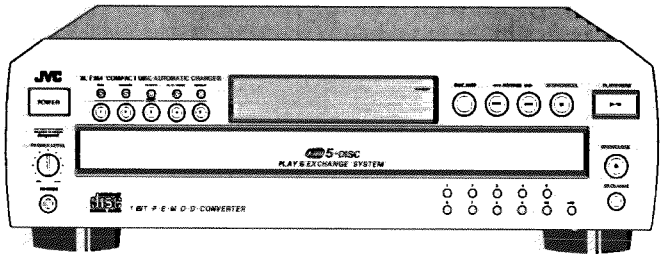
XL-F154BK
XL-F254BK

XL-F154BK



Area Suffix	
BS	the U.K.
C	Canada
EF	Continental Europe Except Germany and Italy
EN	Nordic Countries
G	Germany
J	the U.S.A.
US	Singapore
UT	Taiwan
U	Other Areas

XL-F254BK



COMPACT disc DIGITAL AUDIO

COMPU LINK Component

Contents

Safety Precautions 1-2
Important for Laser Products 1-3
Instruction Book 1-4
Description of Major ICs 2-1
Internal Connection of Display 2-9
Disassembly Procedures 2-10
Flow of Functional Operation Until TOC is Read 2-13
Maintenance of Laser Pickup 2-14
Replacement of Laser Pickup 2-14
Block Diagrams 2-15
Schematic Diagrams 2-17
Printed Circuit Boards 2-19
Parts List 3-1

No. 20621U
Feb. 1997

Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorised in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits.
2. Any unauthorised design alterations or additions will void the manufacturer's guarantee ; furthermore the manufacturer cannot accept responsibility for personal injury or property damage resulting therefrom.
3. Essential safety critical components are identified by (⚠) on the Parts List and by shading on the schematics ,and must never be replaced by parts other than those listed in the manual. Please note however that many electrical and mechanical parts in the product have special safety related characteristics . These characteristics are often not evident from visual inspection . Parts other than specified by the manufacturer may not have the same safety characteristics as the recommended replacement parts shown in the Parts List of the service manual and may create shock , fire , or other hazards .
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.

Warning

1. Service should be performed by qualified personnel only.
2. This equipment has been designed and manufactured to meet international safety standards.
3. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
4. Repairs must be made in accordance with the relevant safety standards.
5. It is essential that safety critical components are replaced by approved parts.
6. If mains voltage selector is provided, check setting for local voltage .

Important for Laser Products

1. CLASS 1 LASER PRODUCT
2. DANGER : Invisible laser radiation when open and interlock failed or defeated. Avoid direct exposure to beam.
3. CAUTION : There are no serviceable parts inside the Laser Unit. Do not disassemble the Laser Unit. Replace the complete Laser Unit if it malfunctions.
4. CAUTION : The compact disc player uses invisible laser radiation and is equipped with safety switches which prevent emission of radiation when the drawer is open and the safety interlocks have failed or are defeated. It is dangerous to defeat the safety switches.
5. CAUTION : If safety switches malfunction, the laser is able to function.
6. CAUTION : Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

VARNING : Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

VARO : Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

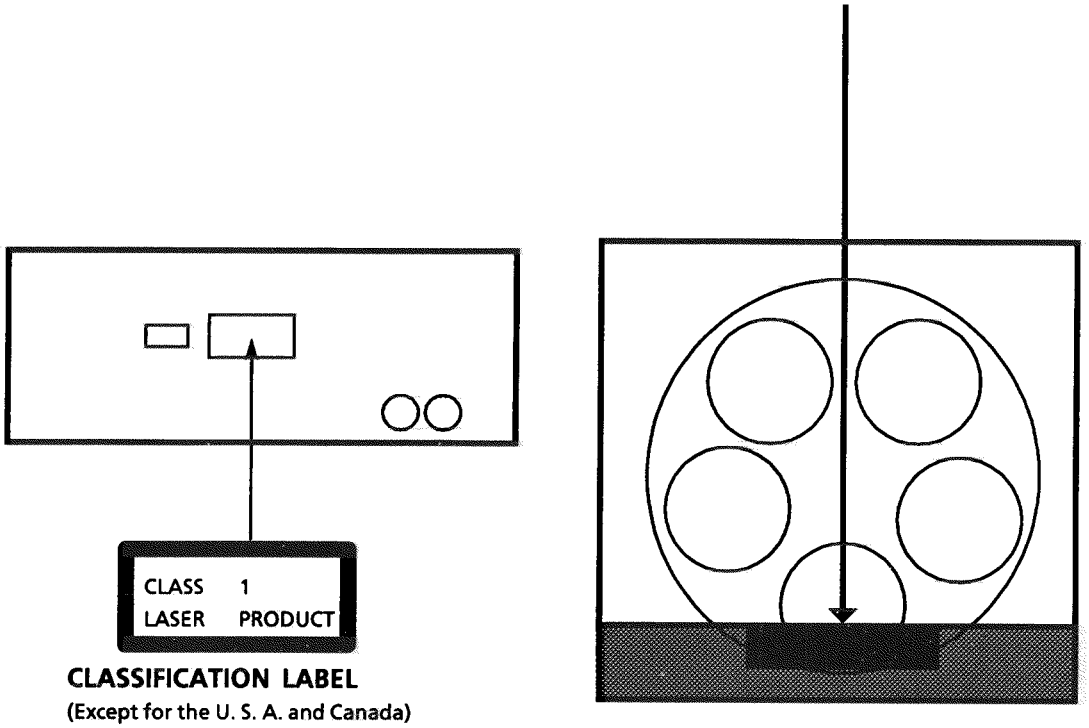
ADVARSEL : Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

ADVARSEL : Usynlig laserstråling ved åpning, når sikkerhetsbryteren er avslott. unngå utsettelse for stråling.

REPRODUCTION AND POSITION OF LABELS

WARNING LABEL
(Except for the U. S. A.)

DANGER: invisible laser radiation when open and interlock failed or defeated. AVOID DIRECT EXPOSURE TO BEAM. (e)	ADVARSEL: Usynling laser-stråling ved åbning, når sikkerhedsafbrydere er ude at funktion. Undgåudsæt-telse for stråling. (d)	VARNING: Osynling laser-stråling när denna del å öppnad och spärren är urkoppled. Betrakta ej stålen. (s)	VARO: Avattaessa ja suo-jalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen. (f)



CLASSIFICATION LABEL
(Except for the U. S. A. and Canada)

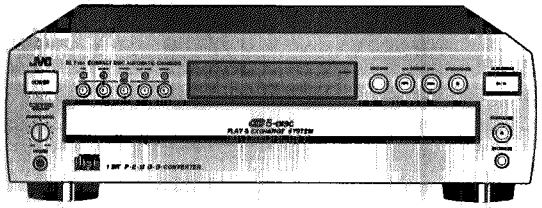
JVC

We would like to thank you for purchasing one of our JVC products.
Before connecting this unit to the wall outlet, please read the instructions carefully to ensure that you obtain the best possible performance.
If you have any questions, please consult your JVC dealer.

COMPACT DISC AUTOMATIC CHANGER

XL-F154BK / XL-F254BK

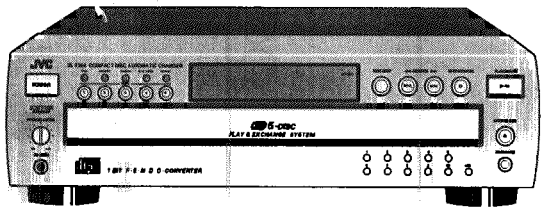
XL-F154BK



COMPACT disc DIGITAL AUDIO

COMPU LINK Component

XL-F254BK



INSTRUCTIONS

For Customer Use:
Enter below the Model No. and Serial No. which are located either on the rear, bottom or side of the cabinet. Retain this information for future reference.

Model No.

Serial No.

E30580-2611A
[J]

Table of contents

INTRODUCTION 1
Precautions ..... -
About this manual ..... -
Names of buttons 2

BEFORE USING FOR THE FIRST TIME 4
Installing the unit 4
Connecting to other equipments 4
Supplying the power 5
To connect the AC power cord of the main unit 5
To install the batteries in the remote control unit (for XL-F254BK) 5
COMPU LINK connection 6

BASIC OPERATIONS 7
Basic functions for disc playback 7
Turning on the power of this unit 7
Loading discs in the disc tray 7
Remote control operation (for XL-F254BK) 7
Playing a disc 7
Stopping playback 7
Locating a point to start playback 8
Skipping to a desired disc 8
Skipping to a desired track 8
Searching for a desired section 8
Specifying a desired disc 8
Specifying a desired track (for XL-F254BK) 8
Changing discs during playback 9

VARIOUS PLAYBACK PATTERNS 9
Playing tracks in a order of track/disc number 9
Playing tracks in a desired order 10
Playing tracks in a random order 11
Playing repeatedly 11
Repeating all discs 11
Repeating one track 11

GENERAL INFORMATIONS 12
COMPU LINK remote control system 12
Care and handling 13
Troubleshooting 14
Specifications 14

Instruction Book

XL-F143BK
XL-F254BK

Precautions

Load compact discs only
Never insert anything other than compact discs into any part of the player.

If a problem persists
If something goes wrong, turn off the power immediately. If the same problem reoccurs when the power is turned on once more, turn off the power again and consult your JVC dealer.

Handling the power cord
When unplugging from the wall socket, always pull the plug body, never the power cable.

Volume settings
A CD player has almost zero background noise. Because of this, the technique of listening to the background level and then setting the volume before the music starts, as used with analog turntables or tape decks, cannot be used. If you raise the volume level too high, speaker damage may result.

Condensation
The CD player uses optical components. If it is moved from a cold location to a warm one, or is used in a room subject to excessive humidity or where a fire has just been lit, condensation could form on the optical components.
This may prevent the laser beam from being properly transmitted and thus causes noise or even a malfunction.
If condensation has formed and the CD player does not function correctly, we recommend that you leave it turned on for an hour or two. If at the end of this time the CD player still does not function properly, please consult your JVC dealer.

Transporting the unit
When carrying this unit, it is best to avoid either tilting it or turning it upside-down. Where you cannot avoid doing so, please remove the discs first.

Using compact discs
Compact discs are made of plastic and can easily be damaged. If the disc is dirty, scratched, warped or otherwise damaged, the digital information may not be picked up correctly.

Applicable discs
This unit can only be used with compact discs bearing the mark below. Never use discs of other types.

COMPACT disc DIGITAL AUDIO

About this manual

This manual covers the operating instructions for the compact disc automatic changers XL-F254BK and XL-F154BK.
There are several functions which require separate instructions for each model. Please check the model number stated on the carton box and follow the descriptions applicable to your unit.
Especially, please note that the remote control unit RM-SX254U is supplied only with XL-F254BK. For XL-F154BK, ignore all the descriptions on the remote control unit.

This manual is organized as follows:

The first part, "INTRODUCTION", gives you the precautions when using this unit, and shows you the names of buttons on the main unit and the remote control unit.

The second part, "BEFORE USING FOR THE FIRST TIME", tells you what kind of operations you should do before playing discs. This part describes where to place the unit for best results, how to install batteries in the remote control unit and how to connect this unit to the amplifier/receiver and other components.

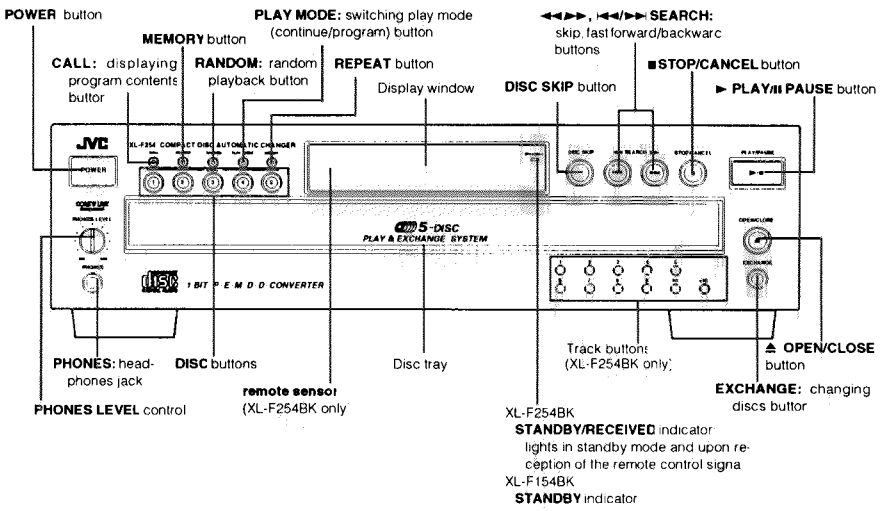
The third part, "BASIC OPERATIONS", describes how to load discs and convenient basic functions for playing discs.

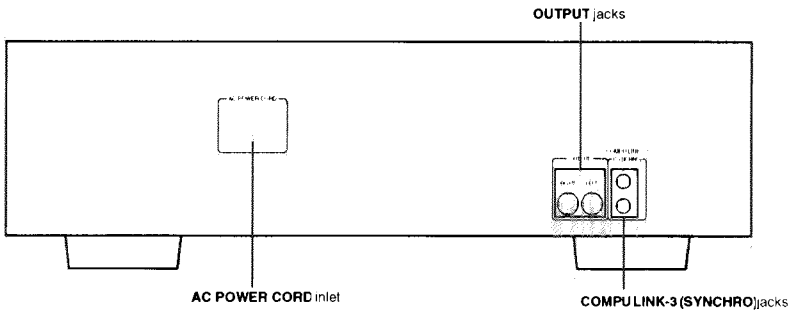
The fourth part, "VARIOUS PLAYBACK PATTERNS", describes various functions for playing discs, and convenient functions for recording.

The fifth part, "GENERAL INFORMATIONS", describes the COMPU LINK remote control system which facilitates various operations between JVC components, and explains how to take care of discs. This part also includes "Troubleshooting", which tells you how to check the unit when a malfunction occurs, and the technical informations regarding this unit.

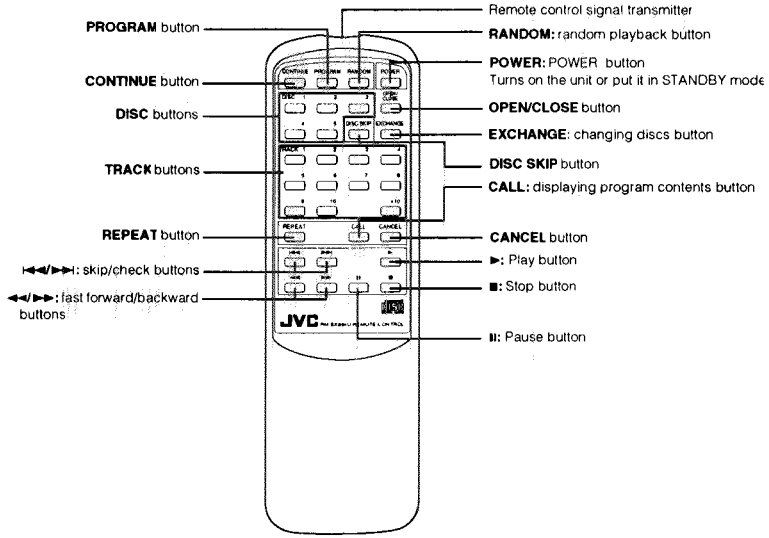
Names of buttons

Main unit

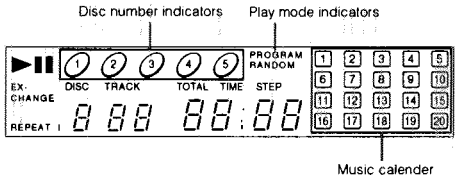




Remote control unit (for XL-F254BK)



Display window



Notes on the disc number indicators

- When the power is turned on or the disc tray is closed with the ▲ OPEN/CLOSE button, the unit searches for loaded discs starting from the disc tray 1. When no disc is loaded, the disc number disappears from the display and unit goes on searching for the next tray.
- When no disc is loaded in the unit, "no disc" appears on the display.
- In continue play mode, when playback of one disc is finished, the circle around the corresponding disc number disappears.
- In program mode, circle appears around the disc number selected at that moment.
- When the EXCHANGE button is pressed, the indication of the disc numbers is reset to the original status and all the disc numbers (1-5) with their circle appear on the display.

BEFORE USING FOR THE FIRST TIME

Installing the unit

Best location

Select a location which is level, dry and neither too cold nor too hot (temperature range 5°C (41°F) to 35°C (95°F)). Also, avoid dusty locations or any location subject to vibration.

If interference occurs

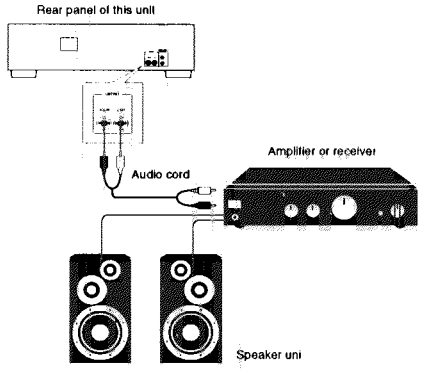
If this unit is placed near a tuner or a radio receiver tuned to AM frequencies, interference may occur. If this happens, we recommend either that you move this unit as far away as possible from the tuner or receiver or briefly turn off the power to this unit.

Connecting to other equipments

Connecting to an amplifier or receiver allows you to listen to the sounc from the speakers.
Connect the OUTPUT jacks of this unit to the line input jacks of ar amplifier or receiver with the supplied audio cord.

Notes

- ***Never connect the OUTPUT jacks to the PHONO jacks of the amplifier or receiver. This may cause damage to the components.***
- ***Make sure that the same channels are connected between this unit and the amplifier or receiver: LEFT to LEFT and RIGHT to RIGHT.***
- ***Do not connect the power plug until all connections are complete.***
- ***Connect the plugs firmly. Loose connections may cause noise or malfunction.***

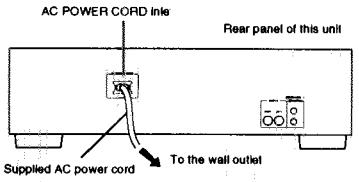


Supplying the power

To connect the AC power cord of the main unit

The AC power cord is supplied separately and must be connected to the unit.
Plug the AC power cord into the AC POWER CORD inlet of this unit and connect to the wall outlet after all connections are complete.

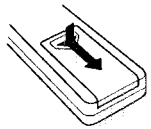
Note
When using the COMPU LINK Remote Control System, do not connect the power cord to the SWITCHED AC OUTLET of an amplifier or receiver.



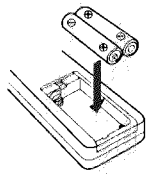
To install the batteries in the remote control unit (for XL-F254BK)

Before operating the remote control unit, install two batteries.

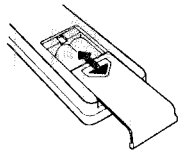
1. **Remove the rear cover of the remote control unit by pressing down and simultaneously pulling it backwards.**



2. **Install batteries. Be sure that the batteries are installed with correct polarity, (+) and (–).**



3. **Attach the rear cover by sliding it back into position.**



Notes
Incorrect use of batteries can cause corrosion or damage. Note the following points to lengthen battery life.
- *Install batteries observing the correct polarity, (+) and (–).*
- *Do not use new and old batteries simultaneously.*
- *Batteries with similar shapes may have different voltage ratings. Be sure to use the correct batteries.*
- *Remove batteries from the remote control unit if it will not be used for a long period of time.*
- *Do not expose batteries to heat or flame.*

Battery replacement

Service life of batteries depends on the condition of use; standard life is about one year. When the batteries become weak, the operating distance of the remote control unit becomes short. If this happens replace the batteries R6P(SUM-3)/AA(15F) with new ones.

Note
- *The lower the temperature, the shorter the battery life.*

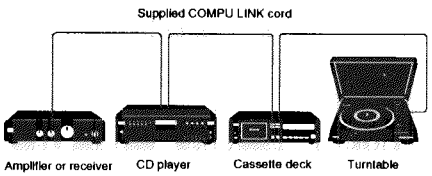
COMPU LINK connection

JVC's COMPU LINK Remote Control System provides unified control over system components connected with COMPU LINK. Connecting JVC audio components with the COMPU LINK jacks automatically controls relative operations between components and facilitates various operations. With the COMPU LINK connection to an amplifier or receiver, you can operate XL-F254BK/XL-F154BK with the amplifier or receiver's remote control unit. Synchronized recording is also available with this feature.

Connecting the COMPU LINK cord

The COMPU LINK-3 SYNCHRO jacks are used to output and input the control signal for the COMPU LINK remote control system.
COMPU LINK-compatible products are provided with the jacks marked COMPU LINK-1, COMPU LINK-2 or COMPU LINK-3, referring to the COMPU LINK version. XL-F254BK/XL-F154BK is equipped with COMPU LINK-3. You can connect XL-F254BK/XL-F154BK also to a component with lower COMPU LINK versions. But, in that case, only the lower versions' features will be available.
Plug the supplied COMPU LINK cord into the COMPU LINK-3 SYNCHRO jack on the rear panel of XL-F254BK/XL-F154BK. Plug the other end into the COMPU LINK jack of the other component. If there are two COMPU LINK jacks, plug it into either of them.

Connecting the COMPU LINK system components with the COMPU LINK cords



Basic functions for disc playback

Turning on the power of this unit

Press the POWER button to turn on this unit. The STANDBY indicator is turned off and the display is turned on.

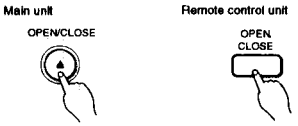
Press again to turn off the power and activate the standby mode. The STANDBY indicator is lit.

The power is automatically turned on also by:
- Pressing the ≜ OPEN/CLOSE button.
- Pressing the ► PLAY/II PAUSE button on the main unit or the ► button on the remote control unit.

Notes
- *A small amount of power (4 watts) is consumed even in the standby mode.*
- *To turn off the power completely, disconnect the power cord from the wall outlet.*

Loading discs in the disc tray

Use the ≜ OPEN/CLOSE button to open and close the disc tray.



1. **Open the disc tray by pressing the ≜ OPEN/CLOSE button.**
2. **Place discs on the disc tray according to the groove with their label side up.**
   - To turn the disc tray and locates the disc tray to the just facing you,Press DISC SKIP button.
3. **Close the disc tray by pressing the ≜ OPEN/CLOSE button.**

CAUTION

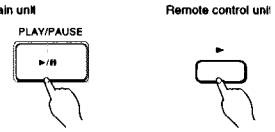
When loading discs in the disc tray, be sure to put the discs according to the groove. Otherwise, the discs will be damaged when the disc tray is closed, and cannot be removed from the unit.

Remote control operation (for XL-F254BK)

Point the remote control unit towards the remote sensor and operate it steadily and carefully. The remote control unit can be used within a range of about 7 meters (23 feet) from the remote sensor, and at angles of up to about 30 degrees.

Playing a disc

Press the ► PLAY/II PAUSE button on the main unit or the ► button on the remote control unit.



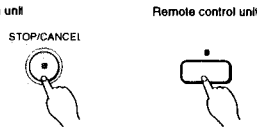
The ► indicator lights on the display and playback starts.

To stop playback temporarily, press the ► PLAY/II PAUSE button on the main unit or the II button on the remote control unit.
The II indicator lights on the display and playback stops temporarily.
To resume playback, press the ► PLAY/II PAUSE button on the main unit or the ► button on the remote control unit.

Adjusting the headphones level
Insert the headphones plug into the PHONES jack and turn the PHONES LEVEL control to adjust the volume level.

Stopping playback

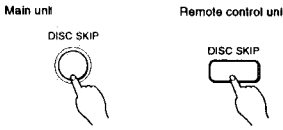
Press the ■ STOP/CANCEL button on the main unit or the ■ button on the remote control unit.



Locating a point to start playback

Skipping to a desired disc

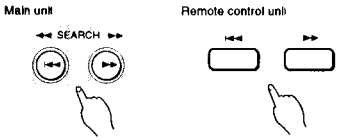
Use the DISC SKIP button.



Each time the DISC SKIP button is pressed, the selected disc number switches from 1 to 5, then back to 1.

Skipping to a desired track

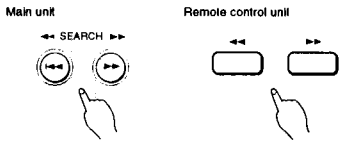
Use the ⏮/⏭ buttons.



To skip back to the beginning of the track being played, tap the ⏮ button. When the beginning of the track is reached, tapping this button again skips to the previous track.
To skip to the next track, tap the ⏭ button.
When using the ⏮ ⏭ SEARCH buttons on the main unit, tap them until the desired track appears.

Searching for a desired section

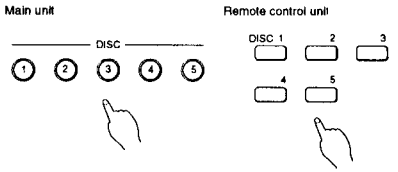
Keep the ◄◄/►► button pressed during playback.



Playback advances or reverses rapidly.
While the ◄◄ button is kept pressed, playback rapidly reverses toward the beginning of the track. While the ►► button is kept pressed, playback rapidly advances toward the end of the track. When the desired section is reached, release the button. The player resumes normal playback from that point.

Specifying a desired disc

Use the DISC buttons (1-5)

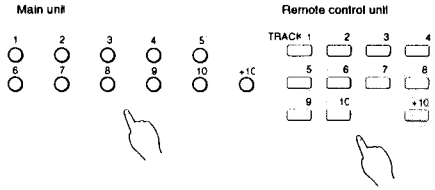


To select a disc, press the desired disc number (1-5). The unit searches for the selected disc and playback starts automatically.

Note
If no disc is loaded in the selected disc tray, the indicator of that disc is turned off within about 4 seconds and then playback starts from the next disc.

Specifying a desired track (for XL-F254BK)

To specify the desired track number, use the track buttons (1-10 +10).



The unit searches for the selected track and playback starts automatically.
When selecting track number 10 or less, press the corresponding track button. When selecting track number 11 or above, use the [+10] button.
Example: To select track number 12, press [+10] and then [2].
To select track number 25, press [+10] twice and then [5].
To select track number 30, press [+10] twice and then [10].

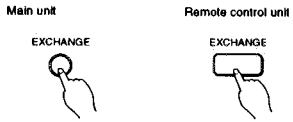
Note
If the selected track number does not exist on the selected disc, playback starts from the first track on that disc.

VARIOUS PLAYBACK PATTERNS

Changing discs during playback

During playback of a disc, you can change other discs in the disc tray without stopping playback.

Press the EXCHANGE button. The disc tray opens and you can change the discs inside.



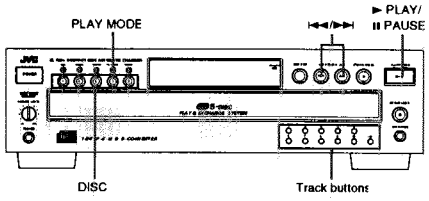
To change the discs loaded in the far end of the disc tray, press the DISC SKIP button to make the disc tray rotate.
After changing the discs, press the EXCHANGE button again to close the disc tray.

It is also possible to change the discs during program playback or random playback, following the above procedure.

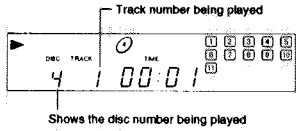
Note
When the disc tray is opened by pressing the EXCHANGE button, it is not possible to close it by pushing it back with hand. Press the EXCHANGE button again to close the tray.

Playing tracks in a order of track/disc number

You can continuously play all the loaded discs, starting from any track on any disc.



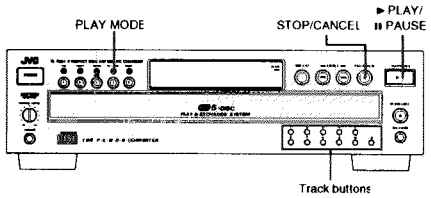
1. **Press the PLAY MODE button on the main unit or the CONTINUE button on the remote control unit so that both the PROGRAM and RANDOM indicators are turned off on the display.**
   When you want to play from a desired disc or track, go to step 3.
2. **Press the ► PLAY/II PAUSE button on the main unit or the ► button on the remote control unit to start playback.**
   Playback starts from the previously selected disc.
   If the disc tray is not closed, pressing the ► PLAY/II PAUSE button closes the disc tray and then starts playback.
   The following display appears.



3. **Use the DISC button to select the disc number which contains the first track to be played.**
   When you want to play from the first track on the selected disc, it is not necessary to select the track number.
4. **Select the track number with the ⏮/⏭ buttons or, for XL-F254BK, the track buttons.**
   The selected track number appears on the display and playback starts from the selected track automatically.

Playing tracks in a desired order

You can play only the favorite tracks in any desired order.



1. **In stop mode, press the PLAY MODE button on the main unit or the PROGRAM button on the remote control unit so that the PROGRAM indicator lights on the display.**
2. **Select the disc which contains the track to be programmed with the DISC button.**
   "AL" (all tracks) appears on the display.

   To program the entire disc
   Skip step 3 below. When the track number is not specified after selecting the disc number, all tracks on the selected disc are programmed.
3. **For XL-F254BK, select the track number by pressing the track buttons. For XL-F154BK, select the track number by pressing the ⏮/⏭ SEARCH button and then the MEMORY button.**
   Refer to "Specifying a desired track" on page 8 for entering the track number. For XL-F154BK, press the MEMORY button with the desired track number shown on the display.
   When the selected track number is programmed, the following display appears.

- For XL-F254BK, you can also use the ⏮/⏭ SEARCH button then the MEMORY button to select a track number.
- If you want to cancel the displayed program step, press the ■ STOP/CANCEL button on the main unit or the CANCEL button on the remote control unit and then enter the new disc number and/or track number.

4. **Repeat steps 2 and 3 for other tracks and/or discs to be programmed.**
   You can program up to 32 steps.
5. **Start playback by pressing the ► PLAY/II PAUSE button on the main unit or the ► button on the remote control unit.**
   The programmed tracks and/or discs are played in the programmed order.

- You can skip to a desired program step with the ⏮/⏭ button. If you have programmed all disc (1–5) as "AL", pressing ⏭ (or ⏮) will skip to the next (or previous) disc.
- When the DISC SKIP button is pressed during program play, the playback skips to the next programmed disc.

To check the program contents
Press the CALL button during stop mode. Each time the CALL button is pressed, the program contents are displayed in the programmed order.
- When the unit is in program play mode, press the ■ button to enter stop mode and then operate the CALL button.

To modify the program contents
Press the CALL button until the display shows the program step to be corrected. Enter the new disc number and/or track number referring to steps 2 and 3 above.
To delete a program step, press the CALL button until the display shows the program step to be deleted and then press the ■ STOP/CANCEL button on the main unit or the CANCEL button on the remote control unit. You can also delete a displayed program step during programming.
- When the unit is in program play mode, press the ■ button to enter stop mode and then delete the program step.

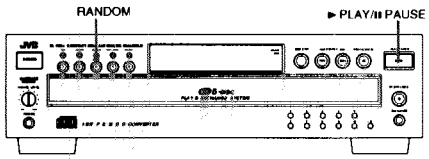
To add discs/tracks to the program during program playback
Specify the disc number by pressing the DISC button and, with XL-F254BK, the track number by pressing the track buttons.
The specified disc/track is added to the end of the program being played back.
- For XL-F154BK, only the disc number can be specified and the entire disc is added to the program. For this operation, it is not possible to utilize the ⏮/⏭ SEARCH buttons.

To exit program mode
Press the PLAY MODE or RANDOM button on the main unit, or the CONTINUE or RANDOM button on the remote control unit, and the program mode is cancelled. However, the program contents are not erased and, whenever the program mode is selected, you can play the tracks in programmed order.

To clear the program
In stop mode, press the ■ STOP/CANCEL button on the main unit repeatedly. The program contents will be cleared step by step.
To clear the entire program, press the ▲ OPEN/CLOSE button on the main unit in stop mode. The program contents will be entirely cleared however, the program mode is not cancelled.

Playing tracks in a random order

You can select and play tracks in random order from all the discs loaded in the unit.
Selections are made so that each track is played only once.



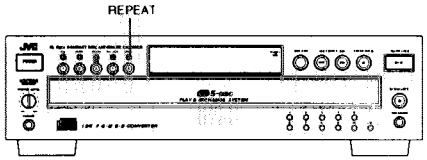
1. **In stop mode, press the RANDOM button so that the RANDOM indicator lights on the display.**
2. **Press the ► PLAY/II PAUSE button on the main unit or the ► button on the remote control unit to start playback.**

- To skip to the track to be played next, press the ►►I button.

To cancel random playback
In stop mode, press the PLAY MODE button on the main unit or the CONTINUE or PROGRAM button on the remote control unit. The RANDOM indicator goes out and the random playback is cancelled.

Playing repeatedly

You can repeatedly play all discs or one track.
It is also possible to utilize this function in combination with random/program playback function.



Repeating all discs

Press the REPEAT button so that the REPEAT indicator lights on the display.

All discs loaded in the unit are played repeatedly
In program mode, the program contents are played repeatedly.

Repeating one track

Press the REPEAT button so that the REPEAT 1 indicator lights on the display.

The displayed track is played repeatedly

To cancel repeat mode
Press the REPEAT button so that both the REPEAT and REPEAT 1 indicators go out.

GENERAL INFORMATIONS

COMPU LINK remote control system

The COMPU LINK Remote Control System controls relative operations between components automatically and facilitates various operations.

This is a system originated and developed by JVC for facilitating various system operations.
The following is a brief explanation of this system.

Automatic source selection
When the supplied COMPU LINK cord is utilized to connect this unit to others equipped with COMPU LINK jacks, switching-in of each system component can be performed with a single touch on the source selector button located on a JVC amplifier or receiver.
When selection is carried out in this manner, the corresponding unit will automatically start operation.
Upon pressing of the play button, the source selector of the amplifier or receiver changes automatically. When a new unit is switched in, the previously selected component stops operation within five seconds.

Synchronized recording
Synchronized recording refers to the process in which a JVC cassette deck starts recording, synchronized with this unit. Synchronized recording is carried out as follows.
1. Set the cassette deck to the recording pause mode in accordance with its instructions.
2. To record only certain tracks, program the tracks in any order, as desired.
3. Press the ► PLAY/II PAUSE button on the front panel of this unit. The cassette deck automatically starts recording, synchronized with this unit.

Notes
- *Synchronized recording stops automatically when this unit stops playback.*
- *To cancel synchronized recording, press the stop button of this unit or the cassette deck.*
- *To properly operate the synchronized recording, the buttons/controls other than POWER, ■ STOP and OPEN do not function.*
- *If the recording pause mode is set on the cassette deck by pressing the II PAUSE button after pressing the ● REC and ► PLAY buttons simultaneously, synchronized recording is not possible. For details, refer to the instructions for the cassette deck.*

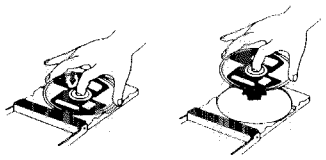
Automatic power on/off function
This function is to control the power on/off of the receiver/amplifier or this unit respectively as the following.
- When this unit enters playback mode, the power of the receiver or amplifier is turned on.
- When the source selector of the receiver/amplifier is set to CD function mode, the power of this unit is turned on.

Notes
- *Abnormal operation may result if the power supply of the component(s) is interrupted. If this happens, you must start over again.*
- *Ensure that the COMPU LINK jacks of the each component are connected with the supplied COMPU LINK cord. Also, be sure to fully read the instructions for each component.*
- *When the power of the amplifier or receiver is switched off, this unit is also turned off automatically.*

Care and handling

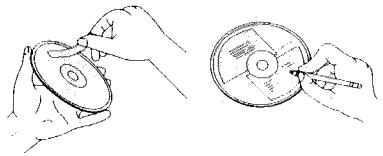
How to handle CDs

When handling compact discs, do not touch the surface of the disc (reflective silver side — the side without the label).
Since compact discs are made of plastic, they are easily damaged. If the disc gets dirty, dusty, scratched or warped, the sound will not be picked up correctly and, in addition, such discs may cause the CD player to malfunction.



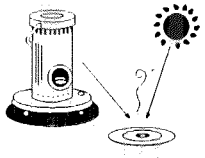
Even on label side

Do not damage the label side, stick paper to or use any adhesive on the surface.



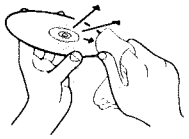
Storage

Make sure that discs are kept in their cases. If discs are piled one on top of another without their protective cases, they can be damaged.
Do not put discs in any location where they can be exposed to direct sunlight, or in any place where humidity or temperature is high. Avoid leaving discs in your car!



Maintenance of discs

When there are fingerprints or other dirt adhering to a disc, wipe the disc with a soft, dry cloth with a movement going from the center outwards.
If difficult to clean, wipe the disc with a cloth moistened with water.
Never use record cleaners, petrol, alcohol or any anti-static agents.



Troubleshooting

What appears to be a malfunction may not always be serious. Please go through the following list before requesting service.

Symptom	Possible cause	Remedy
The unit is not operative.	Power plug is disconnected from the AC outlet.	Connect the plug to the AC outlet
	Discs are not loaded.	Load discs in the disc tray.
Playback is not possible.	Disc is inserted upside down.	Load the disc with its label-side up in the disc tray.
	Disc is not loaded in the correct position.	Load the disc according to the groove of the disc tray.
	Moisture is condensed inside the unit.	Leave the unit turned on until the moisture evaporates.
No sound from the headphones.	Headphones volume is set to the minimum level.	Adjust the volume with the PHONES LEVEL control.
The reproduced sound includes noise.	Disc is dirty.	Wipe off the disc surface with a soft cloth.
	Disc is warped.	Replace the disc with a new one.
The sound is intermittent.	Disc is scratched.	Replace the disc with a new one.
The remote control unit does not function. (for XL-F254BK)	Batteries are exhausted.	Replace both batteries.
	There is an obstacle between remote control unit and the remote sensor of the main unit.	Remove the obstacle.
	Direct sunlight shines on the remote sensor of the main unit.	Shade the unit from the direct sunlight.

Specifications

General

Format	Compact disc digital audio
Signal detection system	Non-contact optical detection
CD capacity	5 discs
Sampling frequency	44.1 kHz
Power requirements	
U.S.A.	AC 120 V ~, 60 Hz
Power consumption	10 watts
Dimensions (W x H x D)	435 x 128 x 386 mm (17-3/16 x 5-1/16 x 15-1/4 inches)
Mass	5.1 kg (11.3 lbs)

Audio performance

Frequency response	2 Hz to 20,000 Hz (±1 dB)
Dynamic range	More than 98.0 dB (at 1 kHz)
Signal to noise ratio	More than 107.0 dB
Total harmonic distortion	Less than 0.0022% (at 1 kHz)
Channel separation	More than 94.0 dB (at 1 kHz)
Wow and flutter	Less than measurable limit
Output level	2.0 Vrms (at full scale)

Accessories

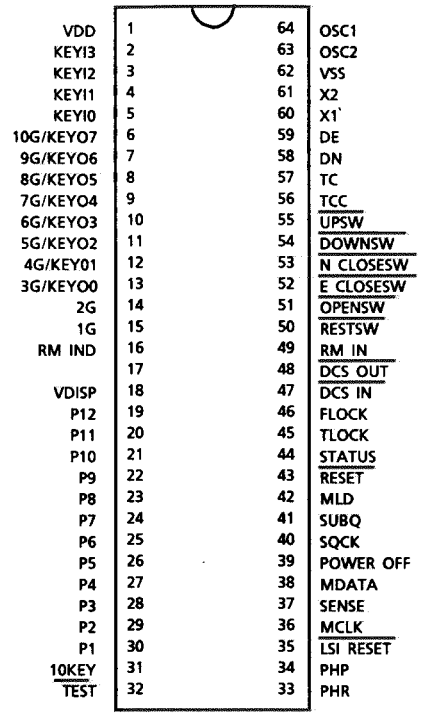
AC power cord	1
Audio cord	1
COMPU LINK cord	1
Remote control unit (RM-SX254U) (XL-F254BK only)	1
Battery R6P(SUM-3)/AA(15F) (XL-F254BK only)	2

Design and specifications subject to change without notice.

Descripion of ICs

■ MN171602JYK2(IC201) : SYSTEM CONTROLLER

1. Terminal Layout



2. Key Matrix (★MARK: not use for XL-F154BK)

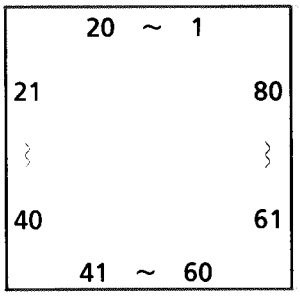
	KEY IN 0	KEY IN 1	KEY IN2	KEY IN3
KEY OUT 0	⏏ (S701)	DISC SKIP (S702)	▶/❚❚ (S703)	■ (S704)
KEY OUT 1	--	⏮ (S705)	--	⏭ (S706)
KEY OUT 2	DISC5 (S728)	REPEAT (S730)	DISC4 (S729)	PLAY MODE (S731)
KEY OUT 3	DISC3 (S724)	RANDOM (S726)	DISC1 (S725)	CALL (S727)
KEY OUT 4	DISC2 (S721)	MEMORY (S722)	--	POWER (S723)
KEY OUT 5	EXCHANGE (S707)	+10 (S708) ★	5 (S709) ★	10 (S710) ★
KEY OUT 6	1 (S711) ★	3 (S712) ★	6 (S713) ★	8 (S714) ★
KEY OUT 7	2 (S715) ★	4 (S716) ★	7 (S717) ★	9 (S718) ★

3. Description

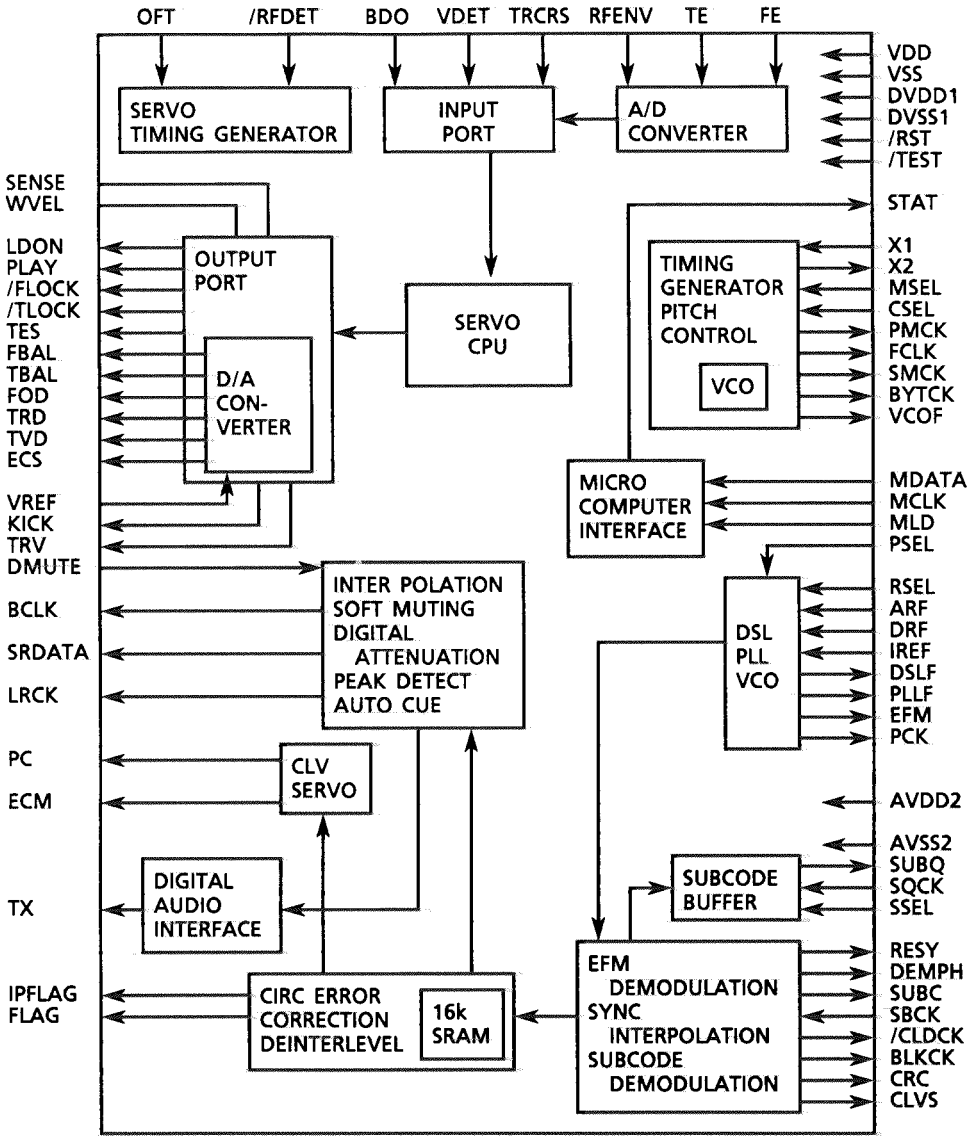
Pin No.	Symbol	I/O	Description	Pin NO.	Symbol	I/O	Description
1	VDD	--	Power supply voltege(+5V)	33	PHR	I	Detecting disc
2	KEYI3	I	Key Mmatrix input	34	PHP	I	Detecting disc number
3	KEYI2	I	Key Mmatrix input	35	/LSI RESET	O	Reset signal output
4	KEYI1	I	Key Mmatrix input	36	MCLK	O	µ-com command clock signal output
5	KEYI0	I	Key Mmatrix input	37	SENSE	I	SENSE signal input
6	10G/KEYO7	O	FL grid control output/Key Mmatrix output	38	MDATA	O	µ-com command data output
7	9G/KEYO6	O	FL grid control output/Key Mmatrix output	39	POWER OFF	O	H : power off, L : power on.
8	8G/KEYO5	O	FL grid control output/Key Mmatrix output	40	SQCK	O	Sub Q clock outpu
9	7G/KEYO4	O	FL grid control output/Key Mmatrix output	41	SUBQ	I	Sub-code Q-code input
10	6G/KEYO3	O	FL grid control output/Key Mmatrix output	42	MLD	O	µ-com command load signal output
11	5G/KEYO2	O	FL grid control output/Key Mmatrix output	43	/RESET	I	Reset signal input
12	4G/KEYO1	O	FL grid control output/Key Mmatrix output	44	STATUS	I	Status signal input
13	3G/KEYO0	O	FL grid control output/Key Mmatrix output	45	TLOCK	I	Lock signal for Tracking
14	2G	O	FL grid control output	46	FLOCK	I	Lock signal for Focus
15	1G	O	FL grid control output	47	/DCS IN	I	Compulink signal input
16	RM IND	O	Remote control	48	/DCS OUT	O	Compulink signal output
17		--		49	RM IN	I	Remote control signal input
18	VDISP	--	Power supply for FL display	50	/RESTSW	I	"L" with pikup rest position
19	P12	O	FL anode control	51	/OPENSW	I	"L" with disc table open
20	P11	O	FL anode control	52	/E CLOSESW	I	"L" with exchange close
21	P10	O	FL anode control	53	/N CLOSESW	I	"L" with nomal close
22	P9	O	FL anode control	54	/DOWNSW	I	"L"with CD mechanism DOWN
23	P8	O	FL anode control	55	/UPSW	I	"L"with CD mechanism UP
24	P7	O	FL anode control	56	TCC	O	Disc table motor control
25	P6	O	FL anode control	57	TC	O	Disc table motor control
26	P5	O	FL anode control	58	DN	O	Disc tray motor control
27	P4	O	FL anode control	59	DE	O	Disc tray motor control
28	P3	O	FL anode control	60	X1	--	GND
29	P2	O	FL anode control	61	X2	--	
30	P1	O	FL anode control	62	VSS	--	GND
31	10KEY	I	Pull UP or Pull down (XL-F154BK Pull down)	63	OSC2	--	Clock oscillation
32	TEST	--	Pull UP(+5V)	64	OSC1	--	Clock oscillation

■ MN662720RB (IC401) : DIGITAL SERVO & DIGITAL SIGNAL PROCESSER

1. Terminal Layout



2. Block Diagram

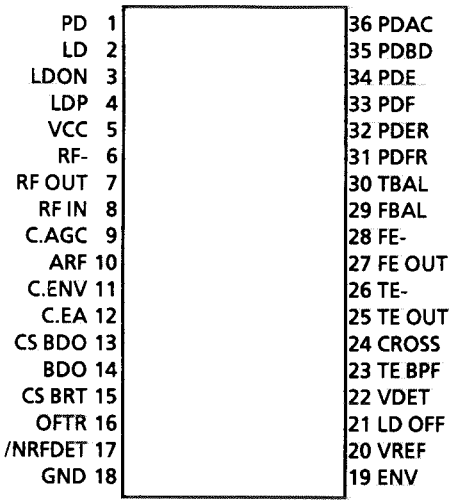


3. Description

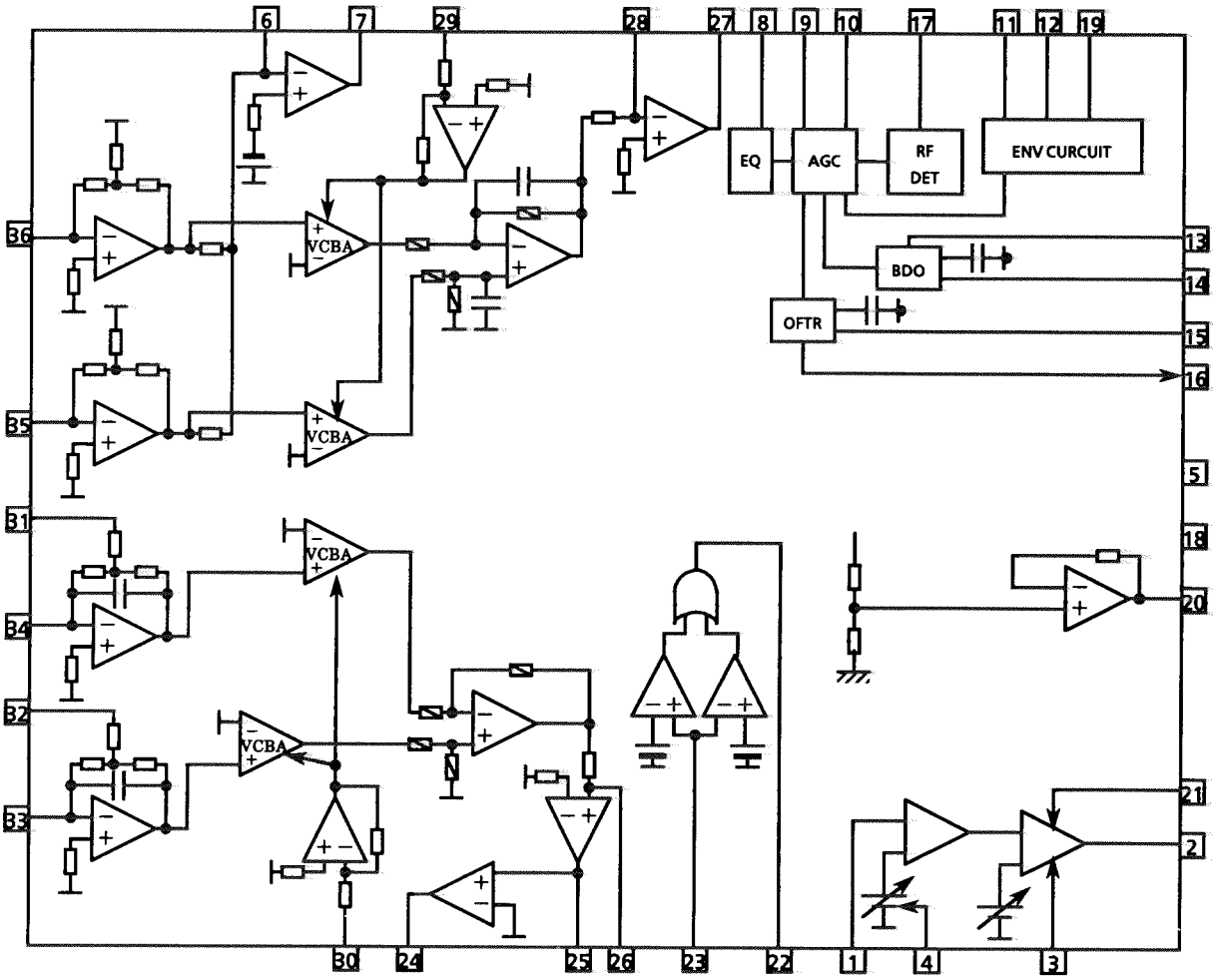
Pin No.	symbol	I/O	Description	Pin No.	symbol	I/O	Description
1	BCLK	O	Bit clock output pin for SRDATA	41	TES	—	Not used
2	LRCK	O	L/R distinction signal output	42	PLAY	—	〃
3	SRDATA	O	Serial data output	43	WVEL	—	〃
4	DVDD1	—	Power supply(Digital)	44	ARF	I	RF signal input
5	DVSS1	—	Connected to GND(Digital)	45	IREF	I	Reference current input pin
6	TX	—	Not used	46	DRF	I	Bias pin for DSL
7	MCLK	I	μ-com command clock signal input (Data is latched at signal's rising point)	47	DSLF	I/O	Loop filter pin for DSL
8	MDATA	I	μ-com command data input	48	PLLF	I/O	Loop filter pin for PLL
9	MLD	I	μ-com command load signal input	49	VCOF	—	Not used
10	SENSE	O	Sense signal output (OFT,FESL,NACEND,NAJEND,POSAD,SFG)	50	AVDD2	—	Power supply (Analog)
11	/FLOCK	O	Lock signal for Focus L : pull	51	AVSS2	—	Connected to GND(Analog)
12	/TLOCK	O	Lock signal for Tracking L : pull	52	EFM	—	Not used
13	BLKCK	O	Subcode · block · clock signal output	53	PCK	—	〃
14	SQCK	I	Outside lock for sub-code Q resister input	54	PDO	—	〃
15	SUBQ	O	Sub-code Q-code output	55	SUBC	O	Subcode serial output data output
16	DMUTE	I	Muting input (H : MUTE)	56	SBCK	—	Clock input for subcode serial output
17	STATUS	O	Status signal (CRC,CUE,CLVS,TTSTOP,ECLV,SQOK)	57	VSS	—	Connected to GND(for X'tal cscillation circuit)
18	/RST	I	Reset signal input (L :Reset)	58	X1	I	Input of 16.9344MHz X'tal oscillation circuit
19	SMCK	—	Not used	59	X2	—	Not used
20	PMCK	—	Not used	60	VDD	—	Power supply(for X'tal cscillation circuit)
21	TRV	O	Traverse enforced output	61	BYTCK	—	Not used
22	TVD	O	Traverse drive output	62	/CLDCK	O	Subcode · Frame · Clock signal output
23	PC	—	Not used	63	FCLK	O	X'tal frame clock output
24	ECM	O	Spindle motor drive signal (Enforced mode output) 3-State	64	IPPLAG	O	Interpolation flag output H : Interpolation
25	ECS	O	Spindle motor drive signal (Servo error signal output)	65	FLAG	—	Flag output
26	KICK	O	Kick pulse output	66	CLVS	—	Not used
27	TRD	O	Tracking drive output	67	CRC	—	〃
28	FOD	O	Focus drive output	68	DEMPH	O	De-emphasis ON signal (H : ON)
29	VREF	I	Reference voltage input pin for D/A output block(TVD,FOD,FBAL,TBAL)	69	RESY	—	Not used
30	FBAL	O	Focus Balance adjust signal output	70	NC1	—	〃
31	TBAL	O	Tracking Balance adjust signal output	71	/TEST	—	Pull up (+5V)
32	FE	I	Focus error signal input(Analog input)	72	AVDD1	—	Power supply (Digital)
33	TE	I	Tracking error signal input(Analog input)	73	NC2	—	Not used
34	RF ENV	I	RF envelope signal input(Analog input)	74	AVSS1	—	Connected to GND
35	VDET	I	Vibration detect signal input(H : detect)	75	NC3	—	Not used
36	OFT	I	Off track signal input(H : off track)	76	RSEL	—	Pull up (+5V)
37	TRCRS	I	Track cross signal input	77	CSEL	—	Connected to GND
38	/RFDET	I	RF detect signal input (L : detect)	78	PSEL	—	Connected to GND
39	BDO	I	BDO input pin (H : drop out)	79	MSEL	—	Connected to GND
40	LDON	O	Laser ON signal output (H : on)	80	SSEL	—	Pull up (+5V)

■ AN8806SB (IC501) : RF & SERVO AMP

1. Terminal Layout



2. Block Diagram

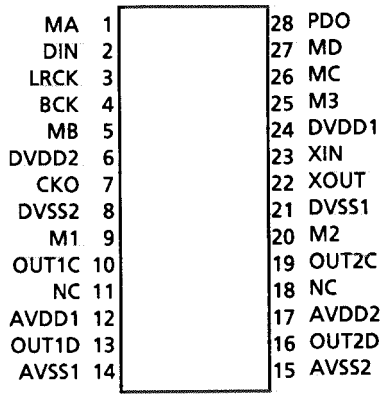


3. Description

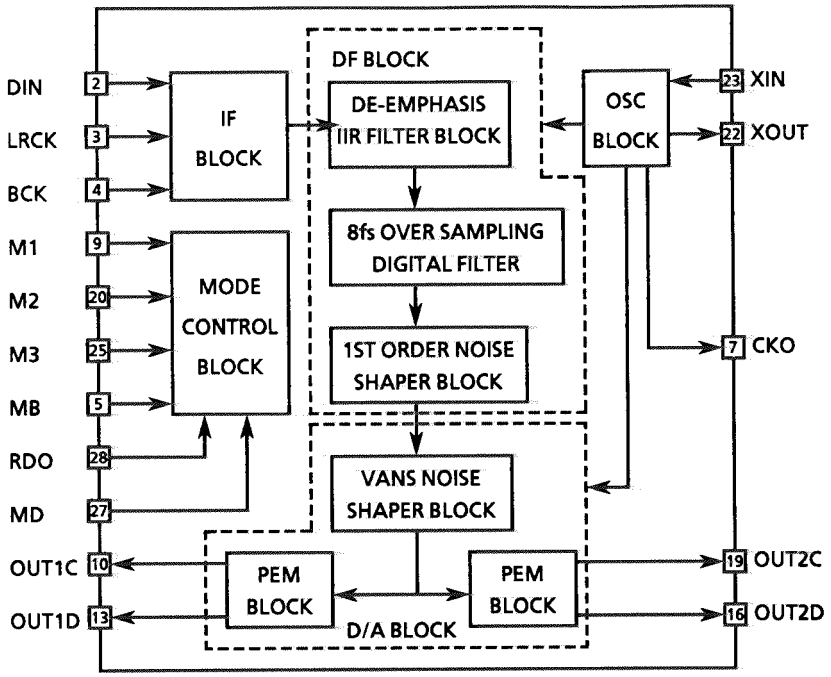
Pin No.	Symbol	I/O	Description
1	PD	I	APC amp input terminal
2	LD	O	APC amp output terminal
3	LD ON	I	APC ON/OFF control terminal
4	LDP	--	Connected to GND
5	VCC	--	Power supply
6	RF-	I	Inverse input pin for RF amp
7	RF OUT	O	RF amp output pin
8	RF IN	I	RF input pin
9	C.AGC	I/O	Connecting pin of AGC loop filter
10	ARF	O	RF output pin
11	C.ENV	I/O	A capacitor is connected to this terminal to detect the envelope of RF signal
12	C.EA	I/O	A capacitor is connected to this terminal to detect the envelope of RF signal
13	CS BDO	I/O	A capacitor is connected to detect the lower envelope of the RF signal
14	BDO	O	BDO output pin
15	CS BRT	I/O	A capacitor is connected to detect the lower envelope of the RF signal
16	OFTR	O	Of-track status signal output pin
17	/NRFDET	O	RF detection signal output pin
18	GND	--	GND
19	ENV	O	Envelope output
20	VREF	O	Reference voltage output pin
21	LD OFF	--	Connect to GND
22	VDET	O	Vibration detection signal output pin
23	TE BPF	I	Input pin of tracking error through BPF
24	CROSS	O	Tracking error cross output pin
25	TE OUT	O	Tracking error signal output pin
26	TE-	I	Inverse input pin for tracking error amp
27	FE OUT	O	Output pin of focus error
28	FE-	I	Inverse input pin for focus error amp
29	FBAL	I	Focus balance control pin
30	TBAL	I	Tracking balance control pin
31	PDFR	I/O	F I-V amp gain control pin
32	PDER	I/O	E I-V amp gain control pin
33	PDF	I	I-V amp input pin
34	PDE	I	I-V amp input pin
35	PD BD	I	I-V amp input pin
36	PD AC	I	I-V amp input pin

■ MN35503 (IC301) : D / A CONVERTER

1. Terminal Layout



2. Block Diagram

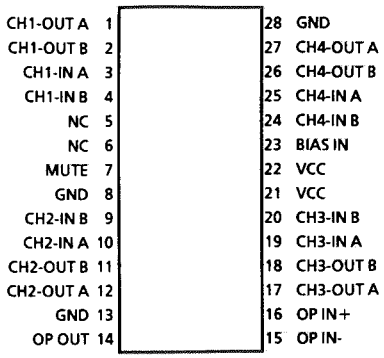


3.Description

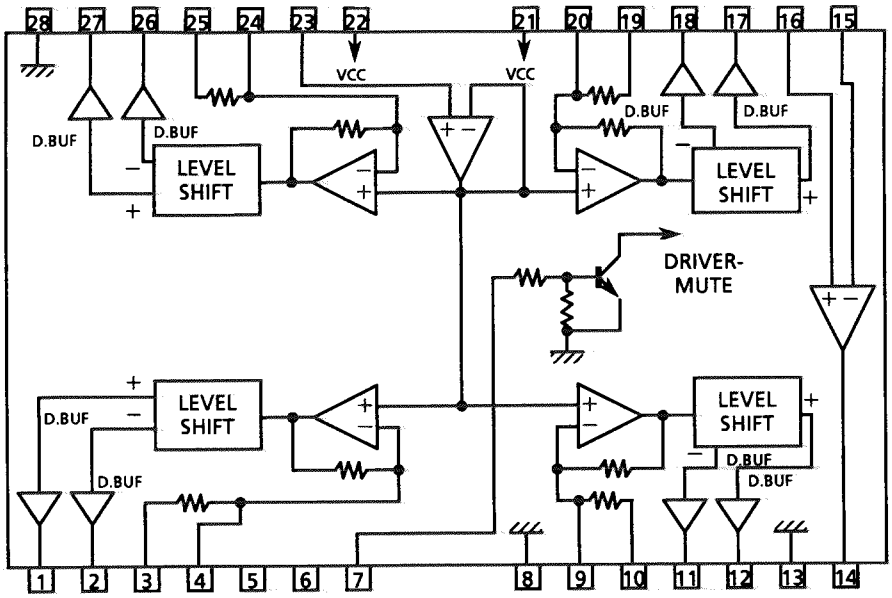
Pin No	Symbol	I/O	Description	Pin No	Symbol	I/O	Description
1	MA	--	Connected to ground	15	AVSS2	--	Analog ground 2
2	DIN	I	Data input	16	OUT2D	O	2D PEM output
3	LRCK	I	LR clock input	17	AVDD2	--	Analog power supply 2
4	BCK	I	Bit clock input	18	NC	--	Non connection
5	MB	I	De-emphasis ON signal	19	OUT2C	O	2C PEM output
6	DVDD2	--	Digital power supply 2	20	M2	--	Connected to ground
7	CKO	O	Clock output	21	DVSS1	--	Digital ground pin 1
8	DVSS2	--	Digital ground 2	22	XOUT	O	Crystal oscillator output
9	M1	--	Connected to ground	23	XIN	I	Crystal oscillator input
10	OUT1C	O	1C PEM output	24	DVDD1	--	Digital power supply 1
11	NC	--	Non connection	25	M3	--	Connected to ground
12	AVDD1	--	Analog power supply 1	26	MC	--	Connected to ground
13	OUT1D	O	1D PEM output	27	MD	I	Reset signal / Digital Att. control signal input
14	AVSS1	--	Analog ground 1	28	PDO	--	Not used

■ BA6897FP(IC801) : BTL DRIVER

1. Terminal Layout



2. Block Diagram

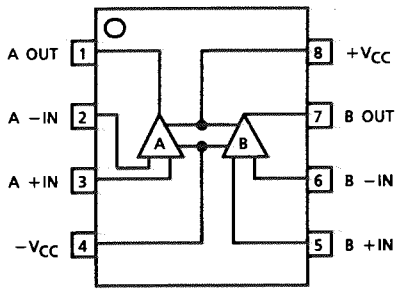


3.Description

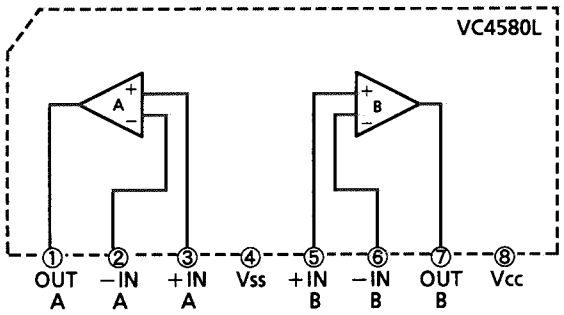
Pin No.	Symbol	I/O	Description
1 2	CH1-OUT A CH1-OUT B	O	Focus drive output
4	CH1-IN B	I	Focus drive input
3 5,6 10 19 25	CH1-IN A NC CH2-IN A CH3-IN A CH4-IN A	—	Non connection
7	MUTE	I	Mute signal input pin
9 20	CH2-IN B CH3-IN B	I I	Spindle motor drive input Feed motor drive input
24	CH4-IN B	I	Tracking drive input

Pin No.	Symbol	I/O	Description
8,13,28	GND	—	GND
11 12	CH2-OUT B CH2-OUT A	O	Spindle motor drive output
14	OP OUT	O	OP amp output
15,16	OP IN	I	OP amp input
17 18	CH3-OUT A CH3-OUT B	O	Feed motor drive output
21,22	Vcc	—	Power supply
23	BIAS IN	I	Input pin of Bias
26 27	CH4-OUT B CH4-OUT A	O	Tracking drive output

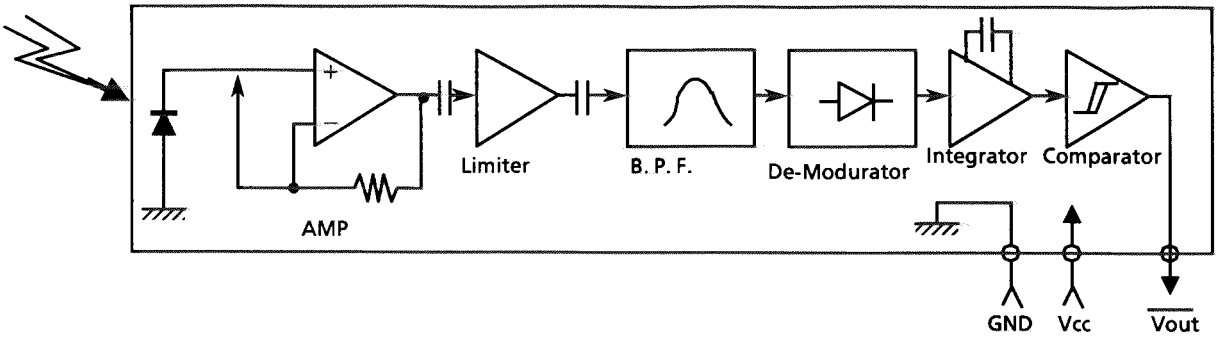
■VC4580D(IC251,IC303)
Dual OP Amp.



■ VC4580L (IC601) : Dual OP Amp.

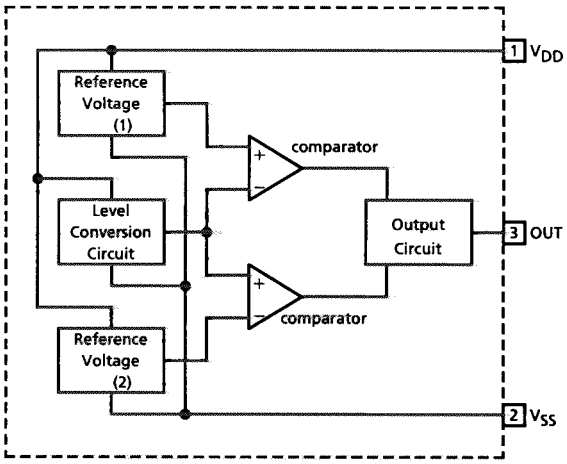


■SPS-420-1 (IC701) : Remocon Module IC (Not use for XL-F154BK)



■ PST9140T : IC202 :Reset IC)

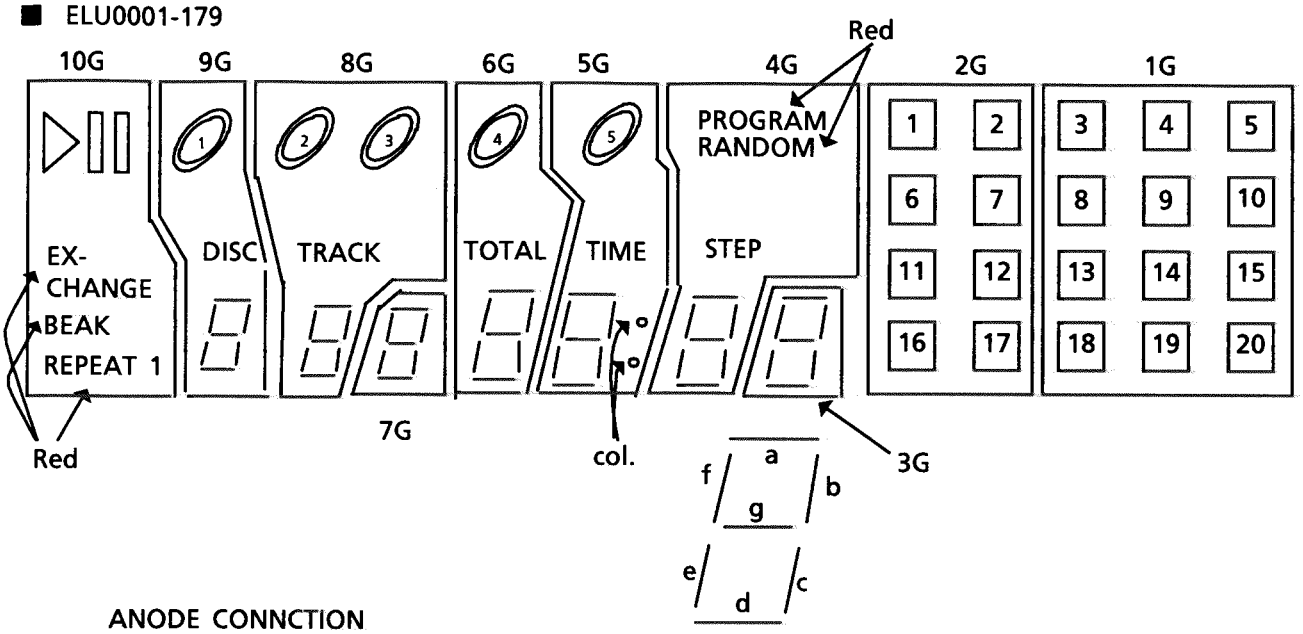
Block Diagram



Pin No.	Pin Name	Functions
1	V_{DD}	Power supply
2	V_{SS}	Ground
3	OUT	Reset signal output : Low level is output when resetting : High level is output when cancelling the reset.

Internal Connections for FL Display Tube

■ ELU0001-179



ANODE CONNCTION

	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	▶	1	2	--	4	5	PROGRAM	--	1	3
P2	▮▮	(1)	(2)	--	(4)	(5)	RANDOM	--	2	4
P3	--	--	3	--	--	--	--	--	--	5
P4	EX-CHANGE	DISC	(3)	--	TOTAL	TIME	STEP	--	6	8
P5	--	--	TRACK	--	--	col.	--	--	7	9
P6	--	a	a	a	a	a	a	a	--	10
P7	BREAK	b	b	b	b	b	b	b	11	13
P8	--	f	f	f	f	f	f	f	12	14
P9	--	g	g	g	g	g	g	g	--	15
P10	--	c	c	c	c	c	c	c	16	18
P11	REPEAT	e	e	e	e	e	e	e	17	19
P12	1	d	d	d	d	d	d	d	--	20

TERMINAL NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14~20	
ELECTORODE	F1	F1	NP	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	NC	
TERMINAL NO	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
ELECTORODE	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	NP	F1	F1

(Notes) F:Filament G:Grid NP:No Pin P:Anode NC:No Connction

Disassembly Procedures

■ Top cover removal
1. Remove 4 scerws on both sides of the top cover and 2 scerws on the rear side.
2. Lift the back of the top cover spreding both sides to remove.

■ Front panel assembly removal
1. Remove the top cover.
2. Disconnect the wires CN106 and P271(Fig 2).
3. Remove 8 screws Ⓐ,Ⓓ,Ⓔ and Ⓕ(Fig.1,2,3).
4. Remove the front panel assembly.

■ Bottom cover removal
1. Remove the top cover.
2. Remove 14 screws Ⓐ,Ⓑ,Ⓒ and Ⓕ(Fig. 1,2,3).
3. Remove the bottom cover.

■ Rear panel removal
1. Remove the top cover.
2. Remove 8 screws Ⓒ,Ⓖ and Ⓗ(Fig. 1,4). (Remove 2 screws Ⓘ.Universal version only)
3. Remove the rear panel.

■ Disc tray removal
1. Remove the top cover.
2. Turn the power on press the open/close button to move the table out. Then take off the power cord. If the machine doesn't work, move the table out at procedure 3.
(3. Move a boss on the cam which is under Ⓙhole clockwise by a screwdriver to remove the disc tray manually, and move the disc tray forwrad. (Fig. 1.)And CD mechanism assembly goes down.)
4. Remove the screw Ⓘ(Fig. 2).
5. Remove the screw and protect cover.(CN105)
6. Disconnect CN105(Fig. 2).
7. Slide the disc tray backward slightly. And, move the tray forward while lifting up Ⓚ to remove the disc tray from the stopper.(Fig. 2)
8. Remove the disc tray.

■ Disc table removal
1. Remove the top cover.
2. Remove the disc table.
3. Remove the screw Ⓛ(Fig. 6)
4. Remove the disc table.

■ Disc tray motor assembly removal
1. Remove the top cover.
2. Remove the disc tray.
3. Remove the bottom cover.
4. Remove the gear Ⓝ(Fig. 7).
5. Remove the loading belt Ⓞ(Fig. 7).
6. Remove the 2 screws, and remove the disc tray motor assembly(Fig. 8).

■ Audio out & compulink PCB removal
1. Remove the top cover.
2. Remove the disc tray.
3. Remove the bottom cover.
4. Remove the rear panel.
5. Remove the hooks fixing the PCB(Fig. 8).
6. Remove the PCB.

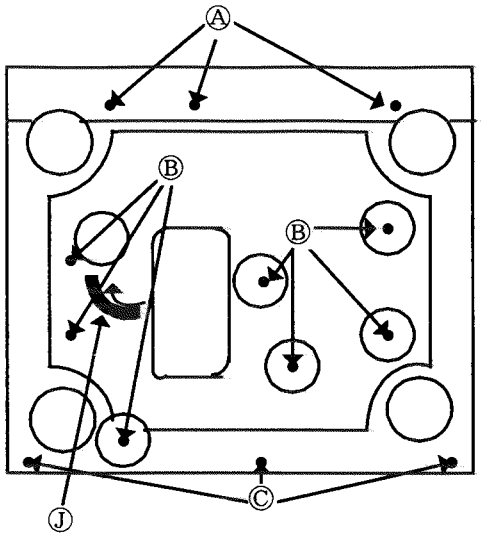


Fig. 1 Bottom view

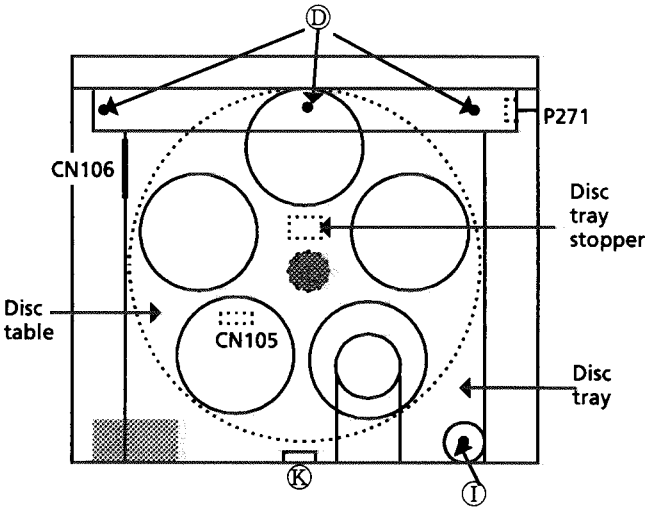


Fig. 2 Top view(without the top cover)

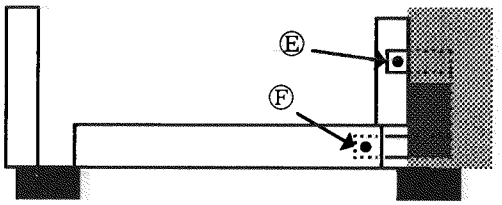


Fig. 3 Side view(without the top cover)

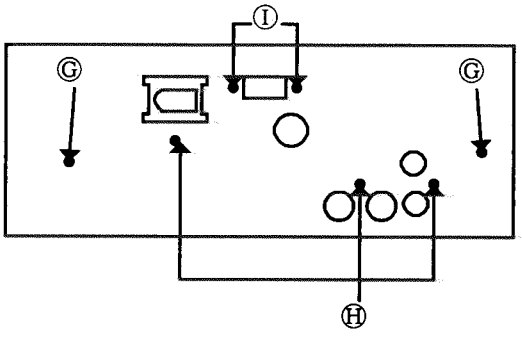


Fig. 4 Rear view

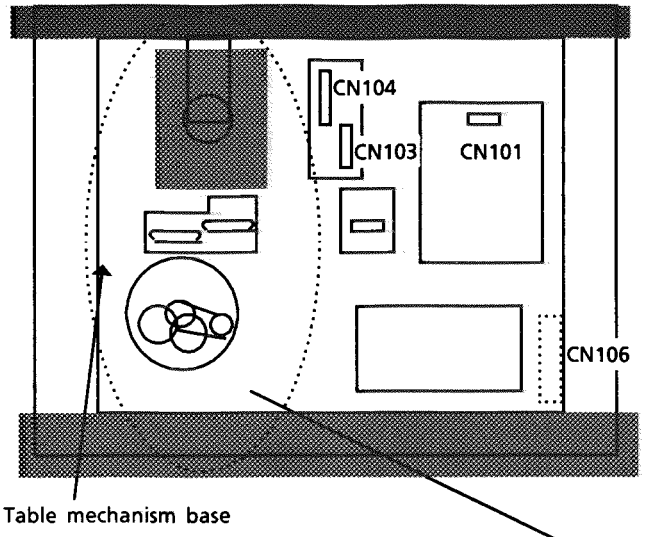


Fig. 5 Top view
(Withput top cover
and disc tray)

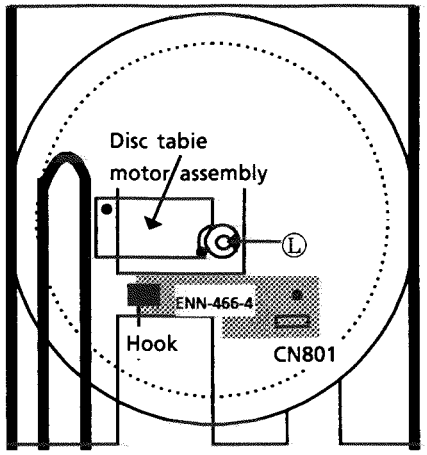


Fig. 6 Disc tray bottom view

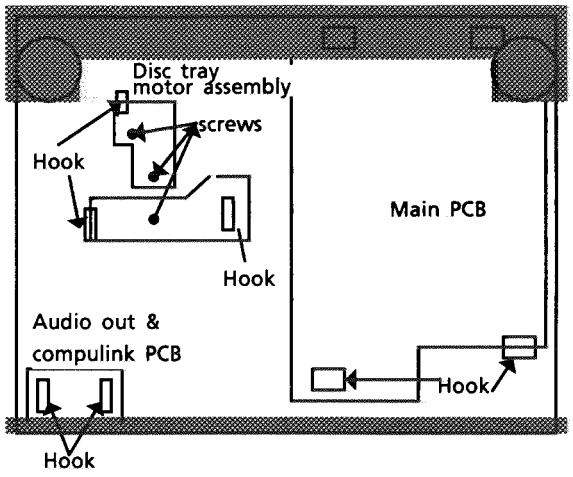


Fig. 8 Bottom view
(Without the bottom cover)

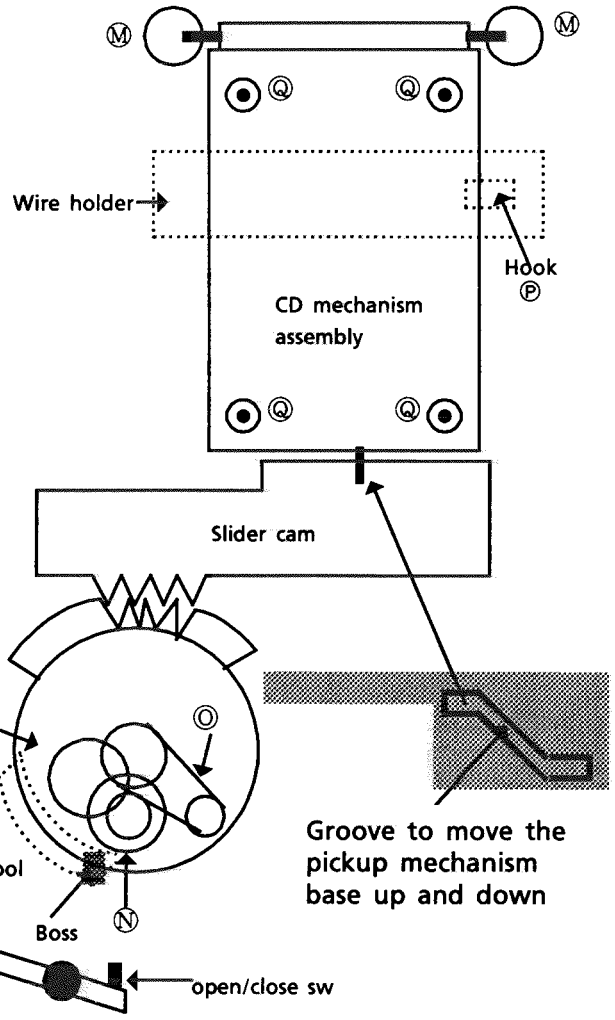


Fig. 7 Loading mechanism

■ Main PCB removal

1. Remove the top cover.
2. Remove the disc tray.
3. Remove the bottom cover.
4. Disconnect the connectoing CN101,CN103,CN104 and P106(Fig. 5).
5. Remove the hooks fixing the main PCB(Fig. 8).
6. Remove the main PCB.

■ CD mechanism assembly removal

1. Remove the top cover.
2. Remove the disc table.
3. Remove the bottom cover.
4. Disconnect the connecting CN103 and CN104(Fig. 5)
5. Remove the hook Ⓟ fixing the table mechanism base, and remove the wire holder(Fig. 7).
6. Remove the 2 screws Ⓜ (Fig. 7).
7. Remove the 4 screws Ⓠ (Fig. 7).
8. Remove the CD mechanism assembly.

■ Pickup removal
1. Remove the CD mechanism assembly.
2. Release the shaft to remove the pickup (Fig. 9).

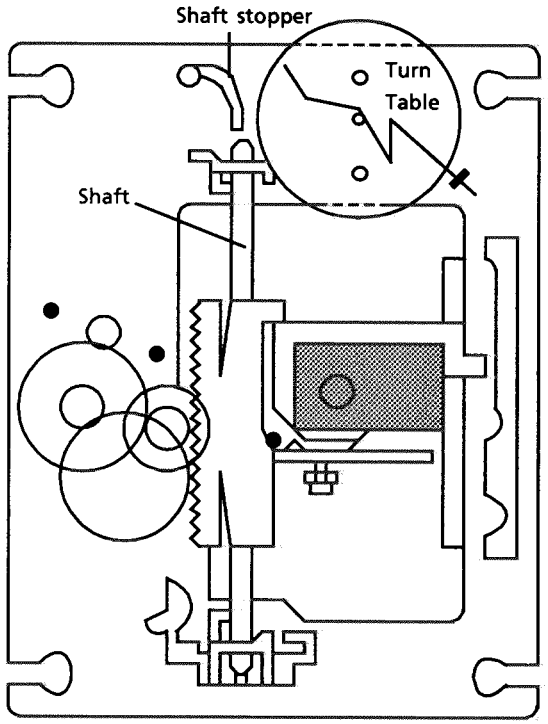


Fig. 9 CD mechanism assembly

■ Spindle motor installation
1. Tighten the 2 screws to the same torque.
2. Fasten the spindle and feed motor P.C. board with the screw and solder.
3. Install the turntable.When installing, press straight down at the center of the turntable until the distance from the surface of the mechanism base to the turntable is exactly 19.4±0.1mm.

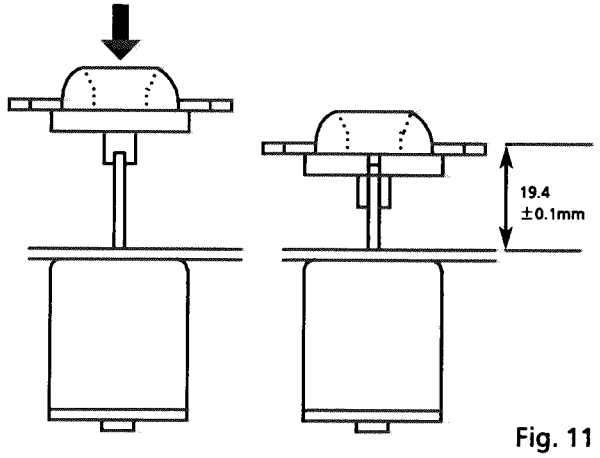


Fig. 11

■ Spindle motor removal
1. Remove the CD mechanism assembly.
2. Remove the turntable, and remove the 2 screws retaining the spindle motor.
3. Remove the screws retaining the spindle and feed motor P.C. Board and unsolder it.

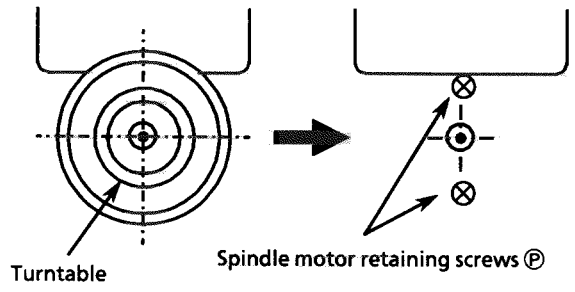


Fig. 10

■ After inserting the turntable, bond the motor shaft and turntable together (at the section marked by an arrow in fig. 11 on the left below).

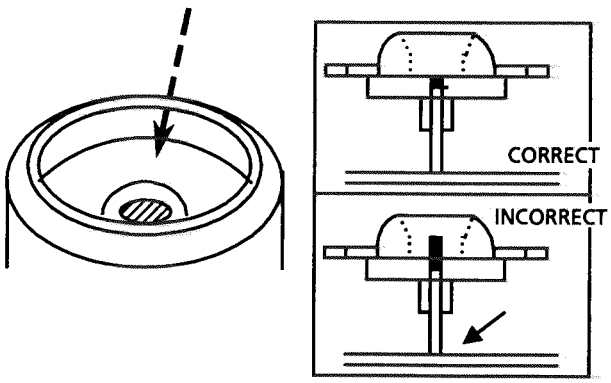
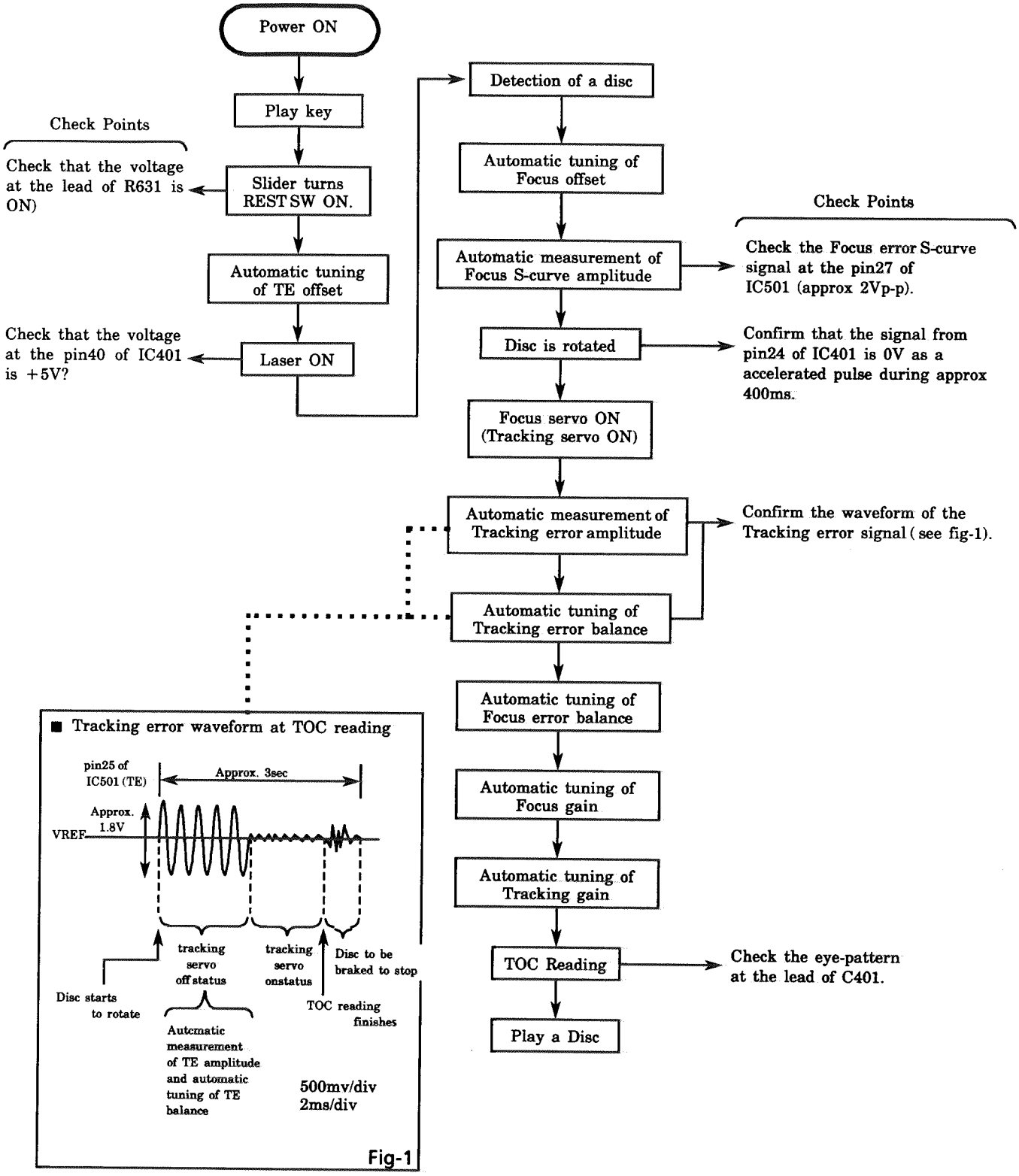


Fig. 12

■ Use "LOCKTITE" #460 bonding agent, and apply as little as possible. Take care not to allow any excess bonding agent to get onto the turntable. Be extremely careful not to allow bonding agent to adhere to the motor bearing (the section marked by an allow in fig 12 on the right).

Flow of Functional Operation Until TOC is Read


Power ON
Play key
Check Points
Check that the voltage at the lead of R631 is ON)
Slider turns REST SW ON.
Automatic tuning of TE offset
Check that the voltage at the pin40 of IC401 is +5V?
Laser ON
Detection of a disc
Automatic tuning of Focus offset
Check Points
Automatic measurement of Focus S-curve amplitude
Check the Focus error S-curve signal at the pin27 of IC501 (approx 2Vp-p).
Disc is rotated
Confirm that the signal from pin24 of IC401 is 0V as a accelerated pulse during approx 400ms.
Focus servo ON (Tracking servo ON)
Automatic measurement of Tracking error amplitude
Confirm the waveform of the Tracking error signal (see fig-1).
Automatic tuning of Tracking error balance
Automatic tuning of Focus error balance
Automatic tuning of Focus gain
Automatic tuning of Tracking gain
TOC Reading
Check the eye-pattern at the lead of C401.
Play a Disc
■ Tracking error waveform at TOC reading
pin25 of IC501 (TE)
Approx. 3sec
Approx. 1.8V
VREF
tracking servo off status
tracking servo onstatus
Disc to be braked to stop
Disc starts to rotate
TOC reading finishes
Autcmatic measurement of TE amplitude and automatic tuning of TE balance
500mv/div
2ms/div
Fig-1

Maintenance of Laser Pickup

(1) Cleaning the pick up lens

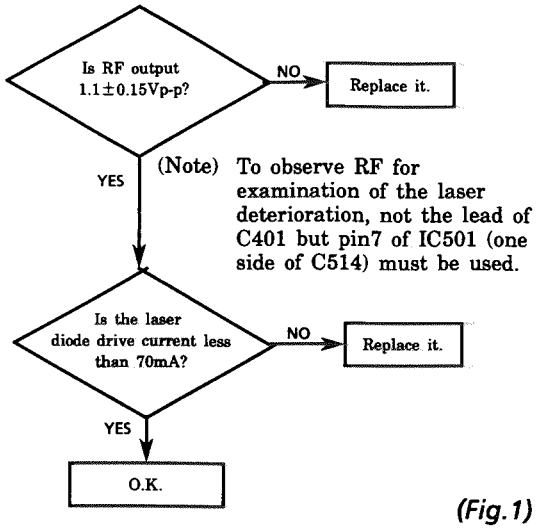
Befor you replace the pick up, please try to clean the lens with a alcohol soaked cotton swab.

(2) Life of the laser diode (Fig.1)

When the life of the laser diode has expired, the following symptoms will appear.

(1) The level of RF output (EFM output: ampli tude of eye pattern) will be low.

(2) The drive current required by the laser diode will be increased. In such a case, check the life of the laser diode following the flowchart below.

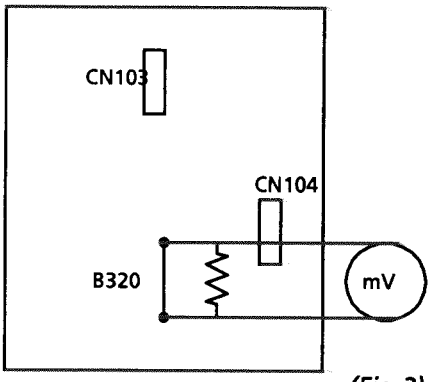

Is RF output 1.1±0.15Vp-p?
NO
Replace it.
YES
(Note) To observe RF for examination of the laser deterioration, not the lead of C401 but pin7 of IC501 (one side of C514) must be used.
Is the laser diode drive current less than 70mA?
NO
Replace it.
YES
O.K.

(Fig.1)

(3) Measurement of laser diode drive current (Fig.2)

Cut the jump wire (B320) and add a 1Ω resistor. (See the following Fig,2)

Measure the voltage across the resistor (1Ω) with a milli-voltmeter. When the voltage is more than 70mV, it shows that the life of the laser diode has expired.



ENN-496

(Fig.2)

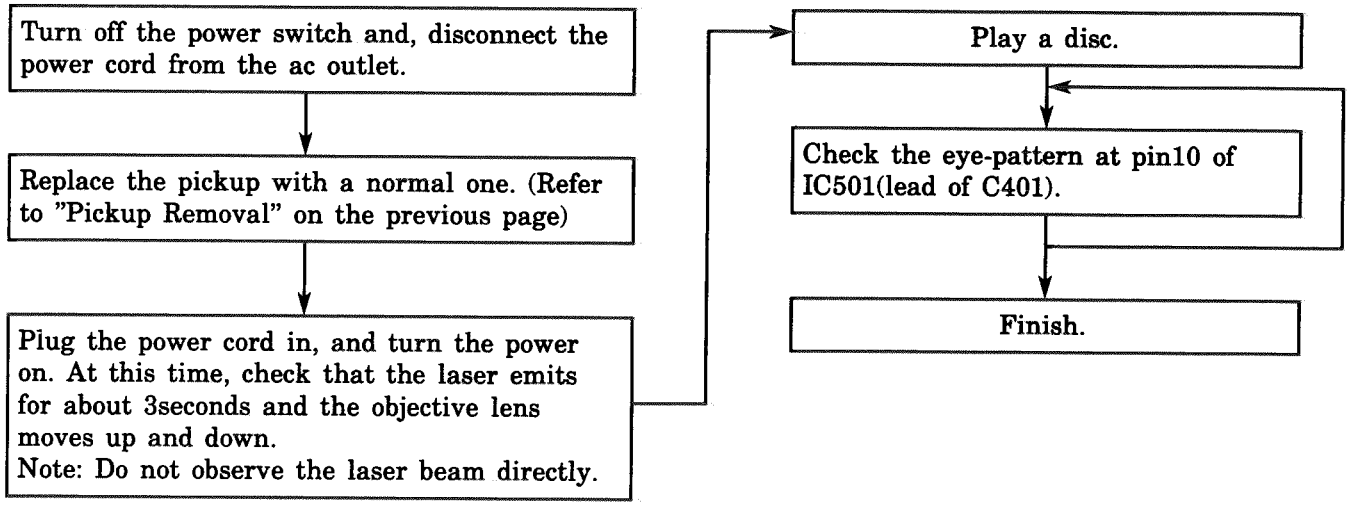
(4) Semi-fixed resistor on the APC PC board

The semi-fixed resistor on the APC printed circuit board which is attached to the pickup is used to adjust the laser power. Since this adjustment should be performed to match the characteristics of the whole optical block, do not touch the semi-fixed resistor.

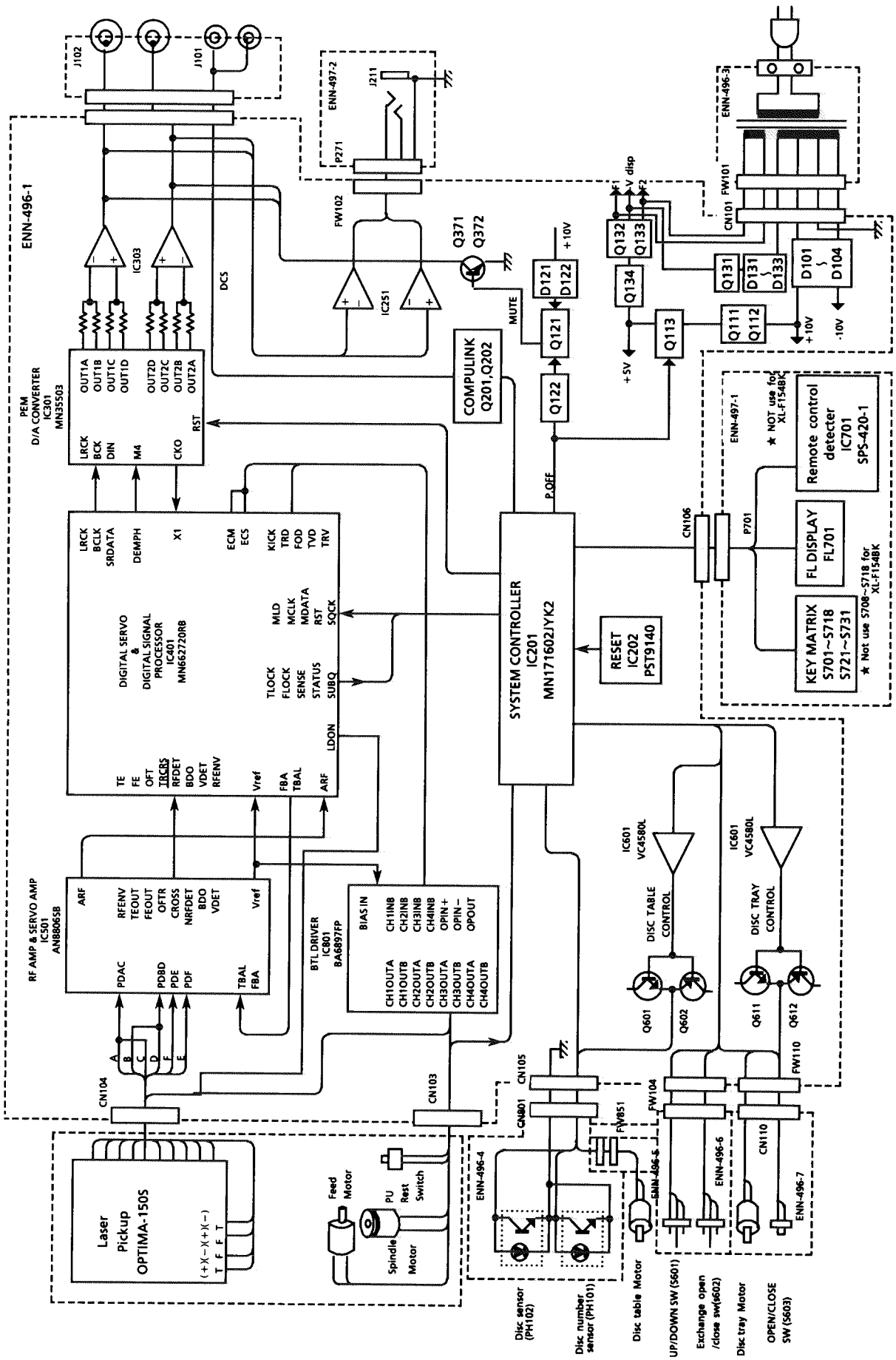
If the laser power is lower than the specified value, the laser diode is almost worn out, and the laser pickup should be replaced.

If the semi-fixed resistor is adjusted while the pickup is functioning normally, the laser pickup may be damaged due to excessive current.

Replacement of Laser Pickup

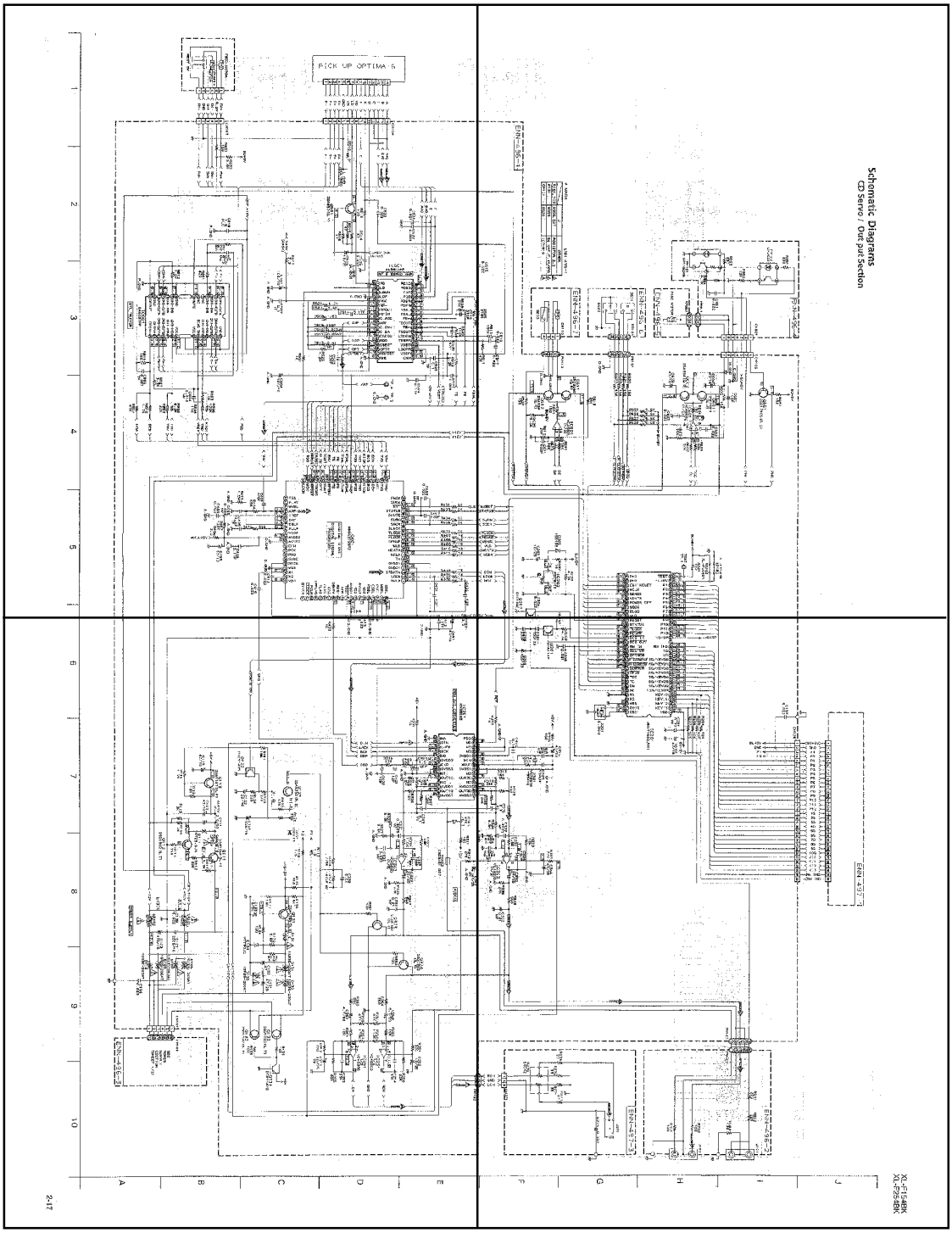

Turn off the power switch and, disconnect the power cord from the ac outlet.
Replace the pickup with a normal one. (Refer to "Pickup Removal" on the previous page)
Plug the power cord in, and turn the power on. At this time, check that the laser emits for about 3seconds and the objective lens moves up and down.
Note: Do not observe the laser beam directly.
Play a disc.
Check the eye-pattern at pin10 of IC501(lead of C401).
Finish.

Block Diagrams

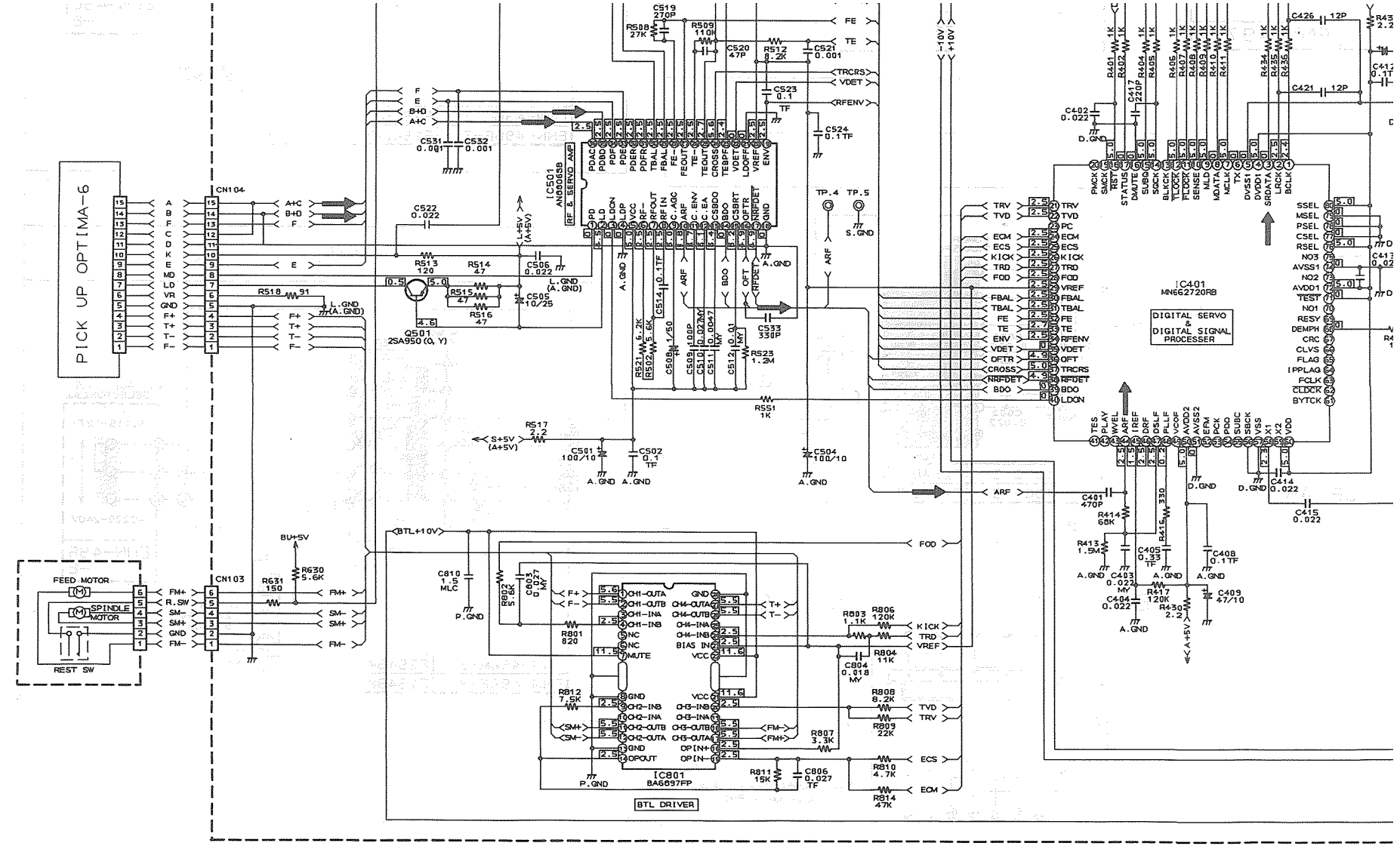


— MEMO —

P2-17-a P2-17-b



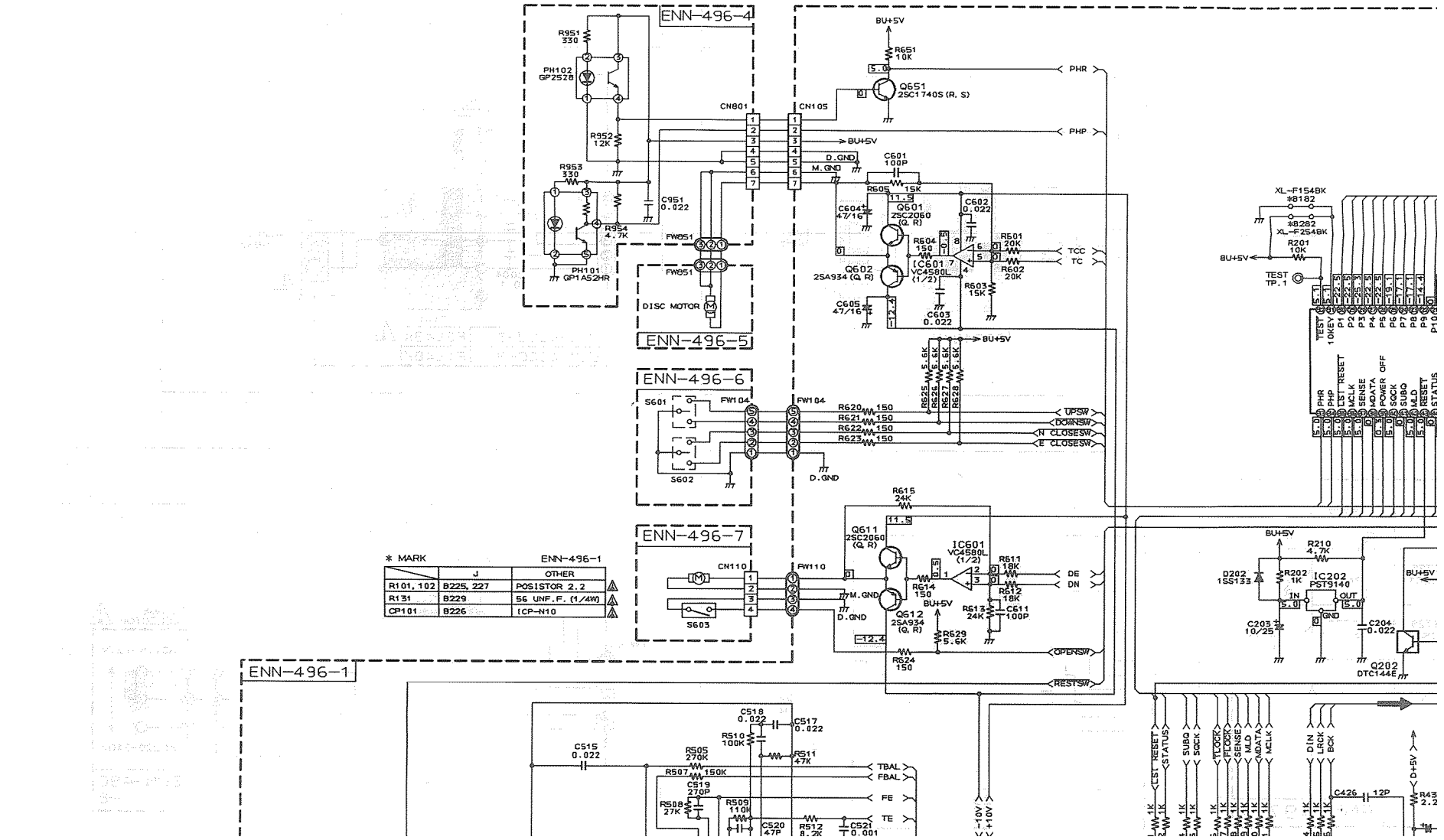
P2-17-c P2-17-d

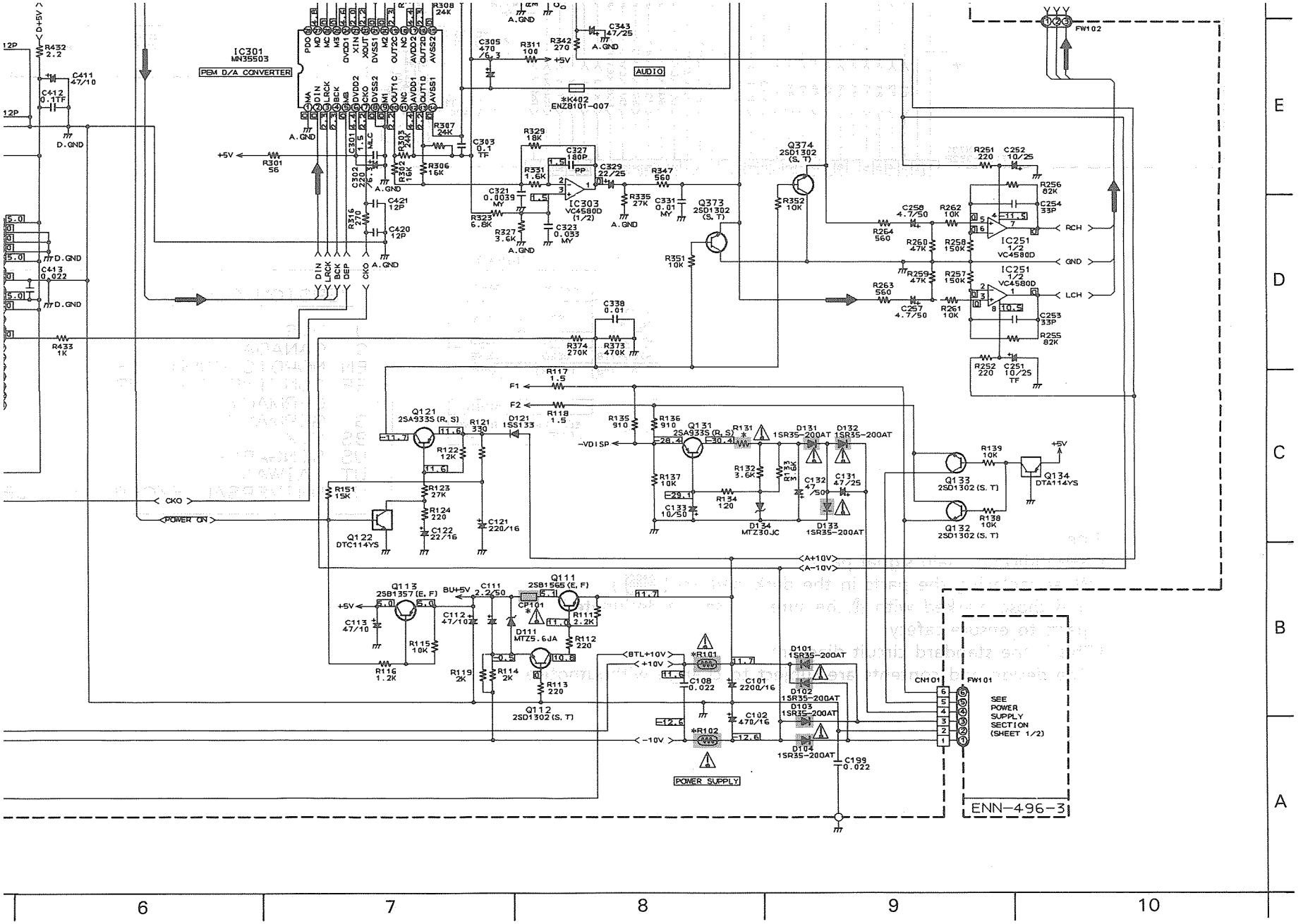

PICK UP OPTIMA-6
CN104
CN103
FEED MOTOR
SPINDLE MOTOR
REST SW
Q501 2SA950 (O, Y)
IC501 AN6966SB
RF & SERVO AMP
IC401 MN662720RB
DIGITAL SERVO & DIGITAL SIGNAL PROCESSER
IC801 BA6897FP
BTL DRIVER
TP.4
TP.5
S.GND
A.GND
D.GND
P.GND
L.GND
FE
TE
TRCRS
VDET
RFENV
ARF
FOD
TRV
TVD
KICK
TRD
VREF
ECS
ECM
BTL+10V
+10V
-10V
S+5V (A+5V)
L+5V (A+5V)
BU+5V

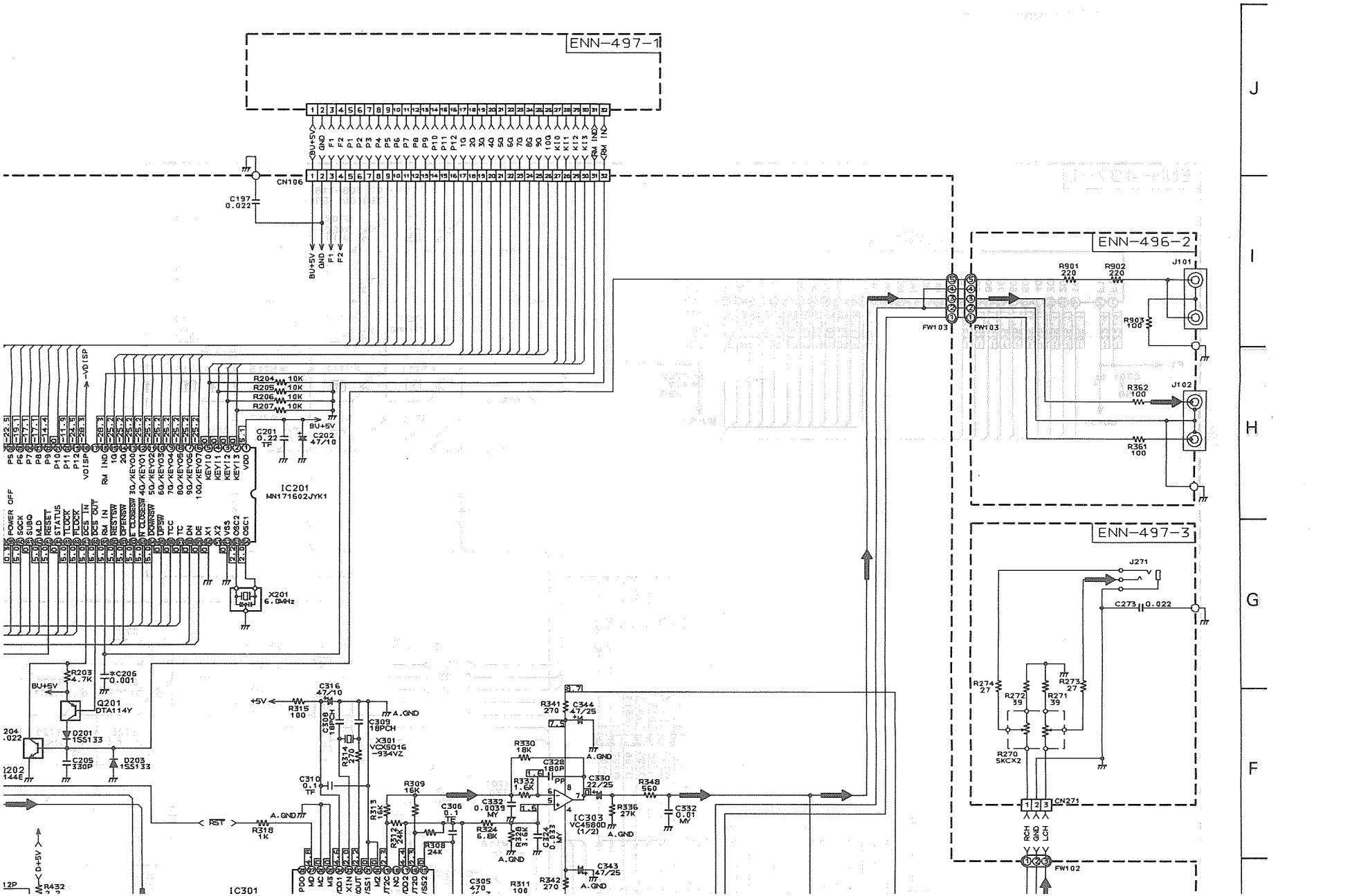
P2-17-a

Schematic Diagrams

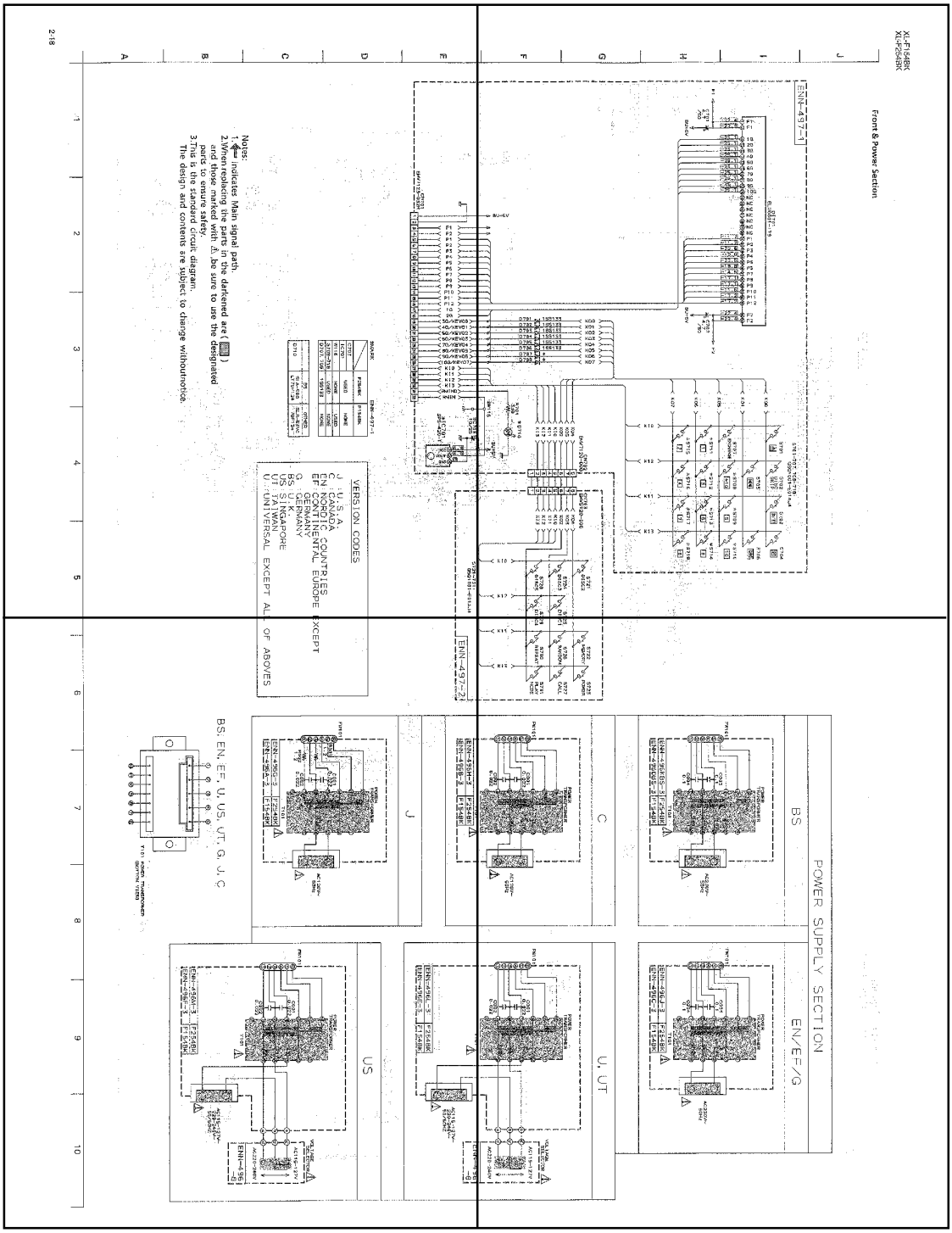
CD Servo / Out put Section



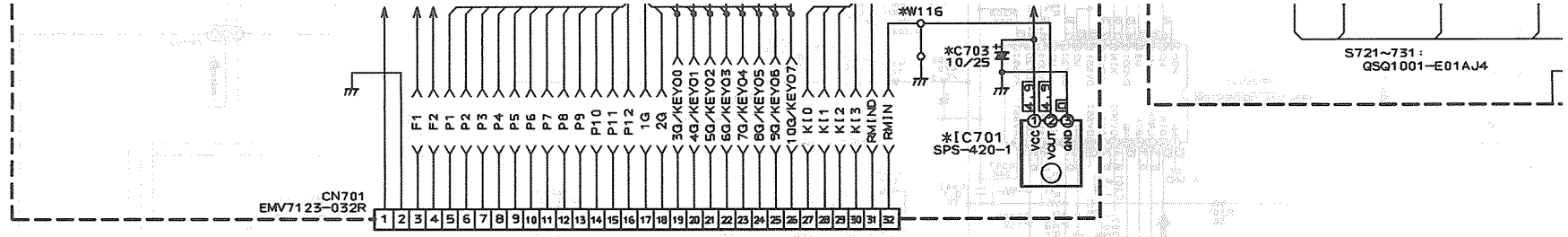

IC301
MN35503
PBM D/A CONVERTER
AUDIO
*K402
ENZ8101-007
IC303
VC4580D
(1/2)
IC251
VC4580D
Q374
2SD1302
(S, T)
Q373
2SD1302
(S, T)
Q121
2SA933S (R, S)
Q131
2SA933S (R, S)
Q133
2SD1302 (S, T)
Q132
2SD1302 (S, T)
Q134
DTA114YS
Q122
DTC114YS
Q113
2SB1357 (E, F)
Q111
2SB1565 (E, F)
Q112
2SD1302 (S, T)
D121
1SS133
D131
1SR35-200AT
D132
1SR35-200AT
D133
1SR35-200AT
D134
MTZ30JC
D111
MTZ5.6JA
D101
1SR35-200AT
D102
1SR35-200AT
D103
1SR35-200AT
D104
1SR35-200AT
CP101
*R101
*R102
FW102
FW101
CN101
SEE
POWER
SUPPLY
SECTION
(SHEET 1/2)
POWER SUPPLY
ENN-496-3
D+5V
D.GND
A.GND
+5V
-VDISP
BTL+10V
+10V
-10V
A+10V
A-10V
BU+5V
CKO
POWER ON
DIN
LRCK
BCK
DEP
RCH
LCH
GND
I
E
D
C
B
A
6
7
8
9
10


ENN-497-1
CN106
C197
0.022
BU+5V
GND
F1
F2
ENN-496-2
J101
R901
220
R902
220
R903
100
J102
R362
100
R361
100
FW103
ENN-497-3
J271
C273
0.022
R274
27
R273
27
R272
39
R271
39
R270
5KCX2
CN271
RCH
GND
LCH
FW102
IC201
MN171602JYK1
X201
6.0MHz
R204
10K
R205
10K
R206
10K
R207
10K
C201
0.22
C202
47/10
R203
4.7K
C206
0.001
Q201
DTA114Y
D201
1SS133
D203
1SS133
C205
330P
C316
47/10
R315
100
C309
18PCH
X301
VCX5016
-934VZ
C310
0.1
R309
16K
R318
1K
RST
IC303
VC4580D
(1/2)
R341
270
C344
47/25
R330
18K
C328
180P
R332
1.6K
C330
22/25
R348
560
R336
27K
C332
0.01
R324
6.8K
R308
24K
C306
0.1
C305
470
R311
100
R342
270
C343
47/25
IC301
A.GND
+5V
BU+5V
D+5V
-VDISP

P2-18-a P2-18-b


XL-F154BK
XL-F254BK
Front & Power Section
ENN-497-1
ENN-497-2
VERSION CODES
J : U.S.A.
C : CANADA
EN : NORTH EUROPEAN COUNTRIES
E : EUROPEAN GENERAL EXCEPT GERMANY
G : GERMANY
GS : SINGAPORE
US : TAIWAN
UT : UNIVERSAL EXCEPT ALL OF ABOVES
Notes:
1.⇐ indicates Main signal path.
2.When replacing the parts in the darkened are ( ) and those marked with ⚠, be sure to use the designated parts to ensure safety.
3.This is the standard circuit diagram.
The design and contents are subject to change withoutnotice.
BS, EN, E, U, US, UT, G, J, C
POWER SUPPLY SECTION
BS
EN/E/G
U, UT
US
J
C

P2-18-c P2-18-d



*MARK ENN-497-1

	F254BK	F154BK
C703	USED	NONE
IC701		
W116	NONE	USED
S708~718	USED	NONE
D707, 708	1SS133	NONE

	BS	OTHER
D710	SLA-580 LT70F124	SLR-54VC 70F124

VERSION CODES

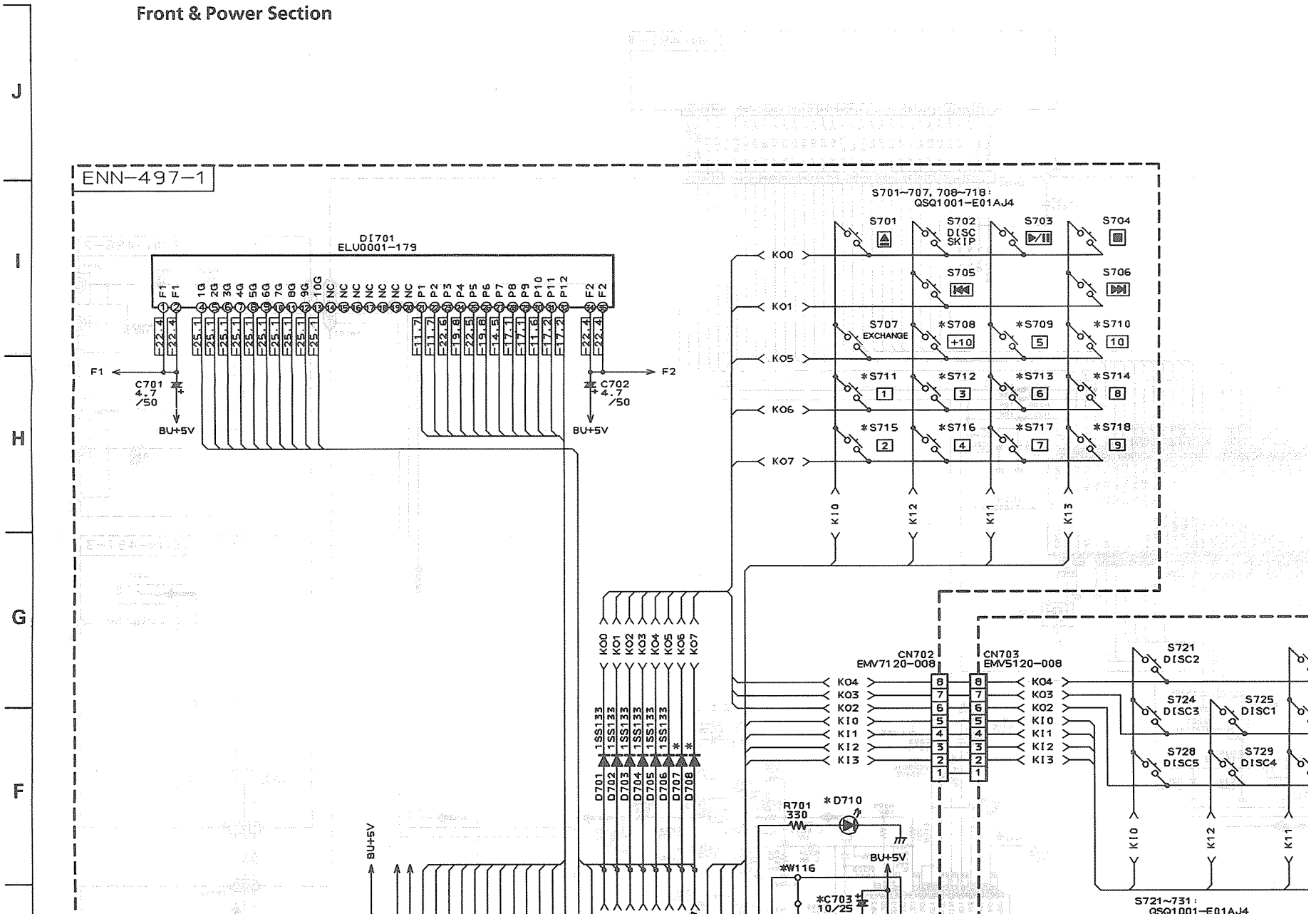
J : U.S.A.
C : CANADA
EN : NORDIC COUNTRIES
EF : CONTINENTAL EUROPE EXCE
GERMANY
G : GERMANY
BS : U.K.
US : SINGAPORE
UT : TAIWAN
U : UNIVERSAL EXCEPT ALL OF

Notes:
1. ⇐ indicates Main signal path.
2. When replacing the parts in the darkened are (▩)
and those marked with ⚠ ,be sure to use the designated parts to ensure safety.
3. This is the standard circuit diagram.
The design and contents are subject to change withoutnotice.

E D C B A

1 2 3 4 5

Front & Power Section



ENN-497-2

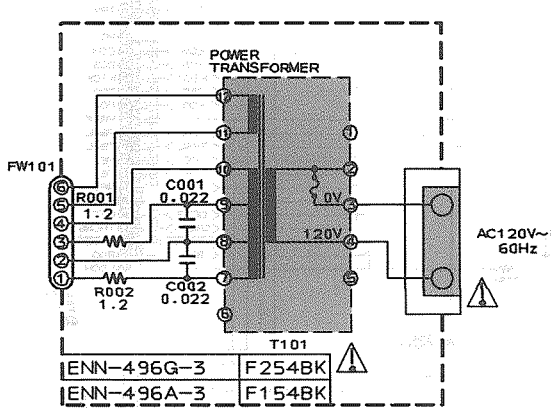
EXCEPT

L OF ABOVES

ENN-496H-3 F254BK

ENN-496B-3 F154BK

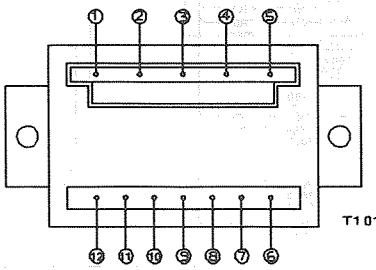
J



ENN-496G-3 F254BK

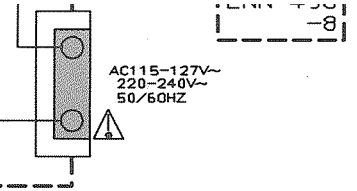
ENN-496A-3 F154BK

BS, EN, EF, U, US, UT, G, J, C

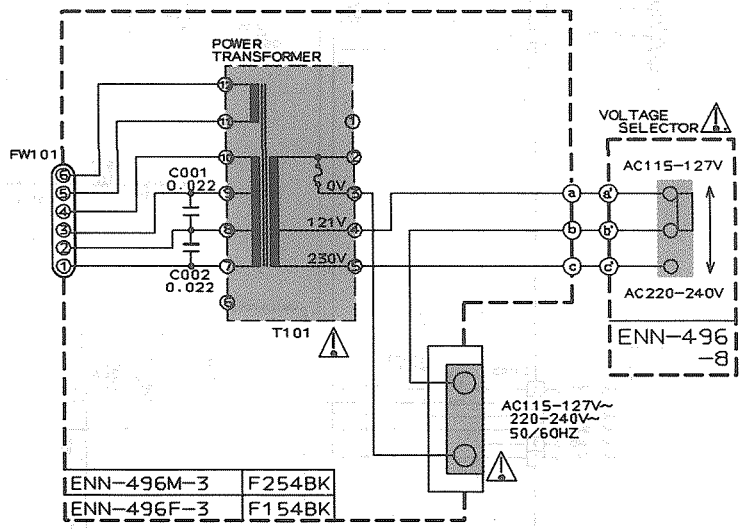


ENN-496L-3 F254BK

ENN-496E-3 F154BK



US



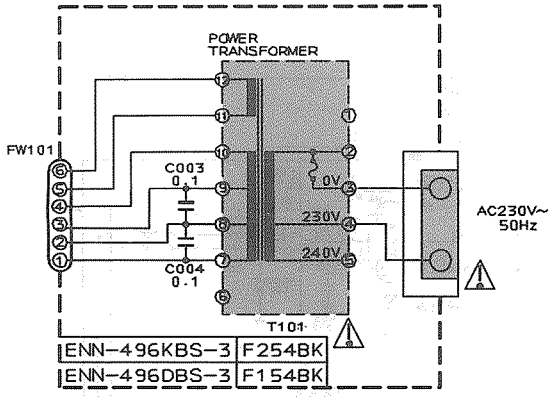
ENN-496M-3 F254BK

ENN-496F-3 F154BK

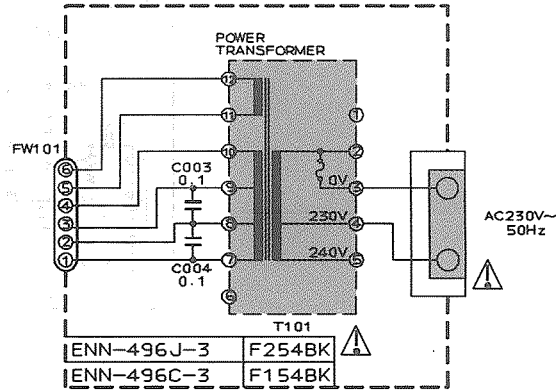
6	7	8	9	10

POWER SUPPLY SECTION

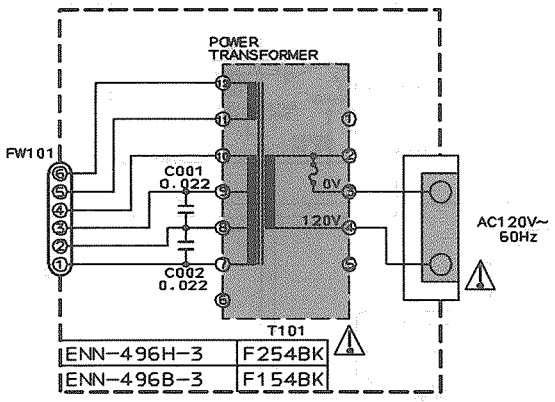
BS



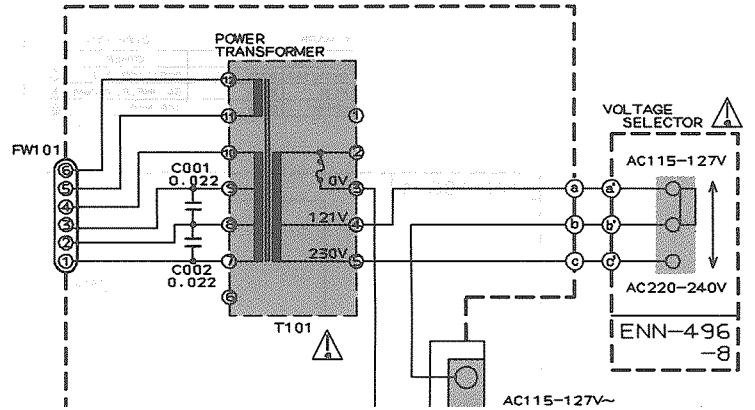
EN/EF/G

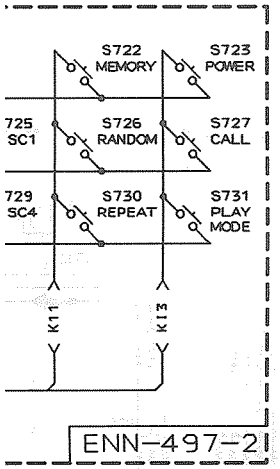


C



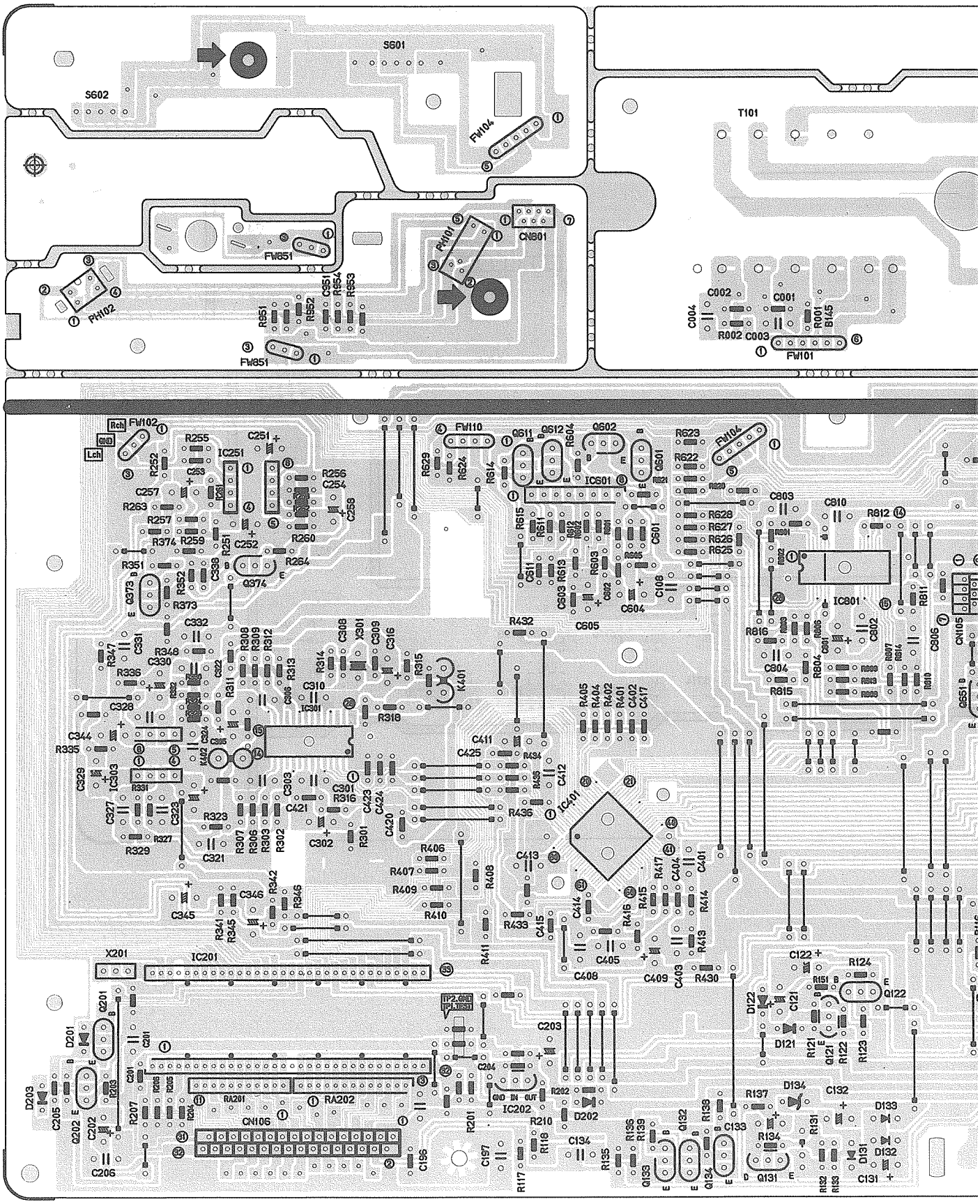
U, UT

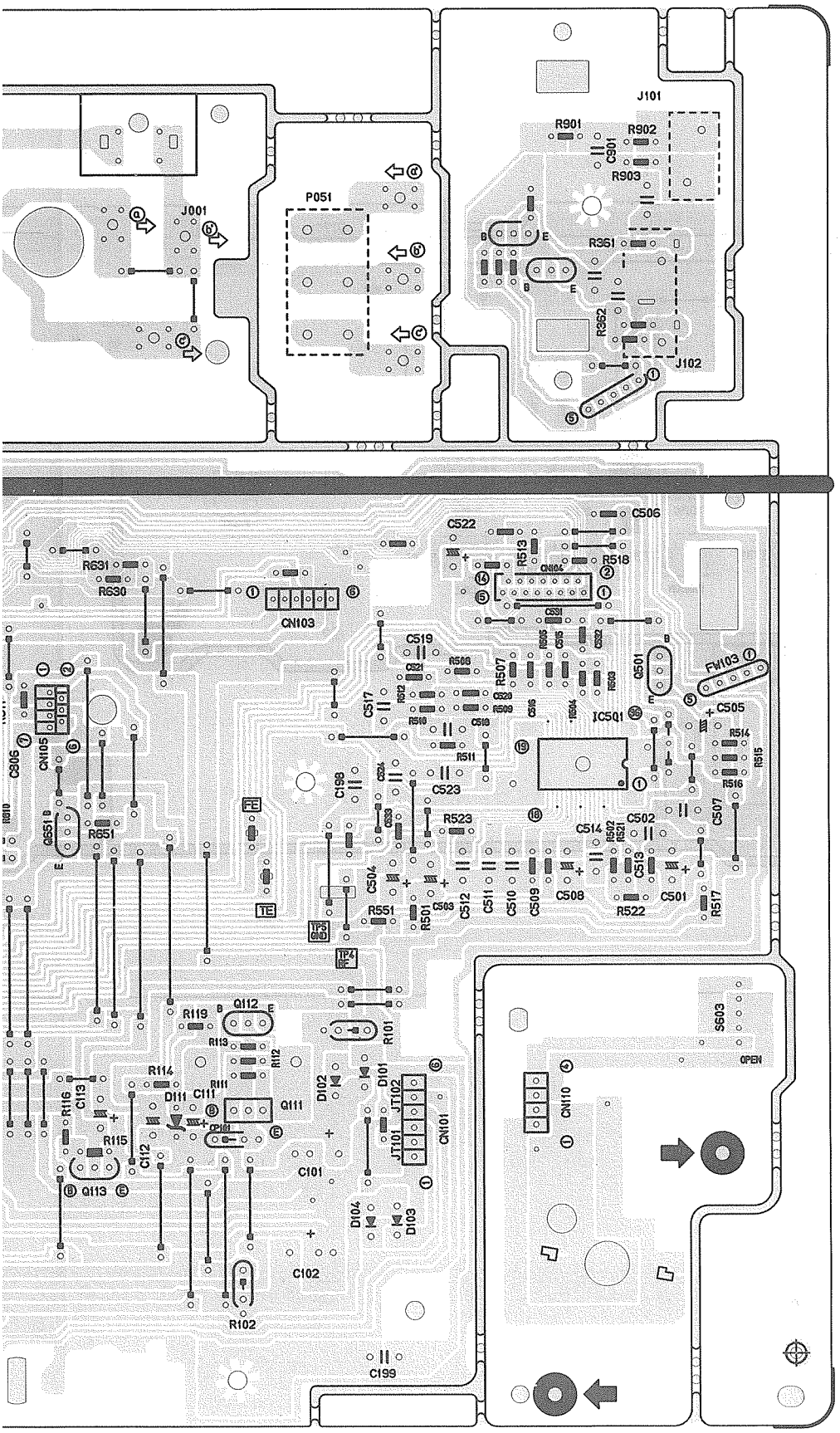




Printed Circuit Boards

MAIN P.C.BORD(ENN-496)





Location List (ENN-496)

Symbol	X	Y
C001	6	H
C002	6	H
C003	6	H
C004	6	H
C101	3	C
C102	3	B
C108	6	F
C111	4	C
C112	4	C
C113	4	C
C121	6	B
C122	5	C
C131	5	A
C132	5	B
C133	6	B
C134	7	A
C196	8	A
C197	7	A
C198	3	E
C199	3	A
C201	10	B
C202	10	A
C203	7	B
C204	7	B
C205	10	B
C206	10	A
C251	9	G
C252	9	G
C253	9	G
C254	9	G
C257	9	G
C258	8	G
C301	9	D
C302	8	D
C303	9	D
C305	9	E
C306	9	E
C308	8	E
C309	8	E
C310	9	E
C316	8	E
C321	9	D
C322	9	E
C323	10	D
C324	9	E
C327	10	D
C328	10	E
C329	10	D
C330	10	E
C331	10	E
C332	9	F
C338	9	F
C343	9	D
C344	10	E
C345	9	C
C346	9	C
C401	6	D
C402	7	E
C403	6	C
C404	6	C
C405	7	C
C408	7	C
C409	6	C
C411	7	E
C412	7	D
C413	7	D
C414	7	C
C415	7	C
C417	7	E
C420	8	D
C421	9	D
C423	8	D

Symbol	X	Y
C424	8	D
C425	7	E
C501	1	E
C502	2	E
C503	3	E
C504	3	E
C505	1	F
C506	2	G
C507	1	E
C508	2	E
C509	2	E
C510	2	E
C511	2	E
C512	2	E
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C514	2	E
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C531	2	G
C532	2	F
C533	3	E
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C603	7	F
C604	7	F
C605	7	F
C611	7	F
C801	5	E
C802	5	F
C803	6	G
C804	6	E
C806	5	E
C810	5	G
C901	2	J
C951	9	H
CN101	3	C
CN103	3	G
CN104	2	G
CN105	5	F
CN106	9	A
CP101	4	C
D101	3	D
D102	3	C
D103	3	B
D104	3	B
D111	4	C
D121	6	B
D122	6	C
D131	5	A
D132	5	A
D133	5	B
D134	6	B
D201	10	B
D202	7	B
D203	10	B
FW101	6	H
FW102	10	G
FW103	1	F
FW104	7	J
FW104	6	G
FW110	8	G
FW851	9	I
FW851	9	H
IC201	10	B

Symbol	X	Y
IC202	7	B
IC251	9	G
IC301	9	E
IC303	10	D
IC401	7	D
IC501	2	F
IC601	7	G
IC801	5	F
J001	4	J
J101	1	J
J102	1	I
K401	8	E
K402	9	E
P051	3	I
P110	2	C
P801	7	I
PA00082	8	A
PH101	8	I
PH102	10	I
Q111	3	C
Q112	4	D
Q113	4	C
Q121	5	C
Q122	5	C
Q131	6	A
Q132	6	A
Q133	6	A
Q134	6	A
Q201	10	B
Q202	10	B
Q373	10	F
Q374	9	F
Q501	1	F
Q601	7	G
Q602	7	G
Q611	7	G
Q612	7	G
Q651	4	E
R001	6	H
R002	6	H
R101	3	D
R102	4	B
R111	4	C
R112	4	C
R113	4	D
R114	4	C
R115	4	C
R116	4	C
R117	7	A
R118	7	A
R119	4	D
R121	5	B
R122	5	B
R123	5	B
R124	5	C
R131	6	A
R132	5	A
R133	5	A
R134	6	A
R135	7	A
R136	7	A
R137	6	B
R138	6	A
R139	6	A
R151	6	C
R201	8	B
R202	7	B
R203	10	B
R204	9	B
R205	9	B
R206	10	B
R207	10	B

Symbol	X	Y
R210	7	B
R251	9	F
R252	10	G
R255	9	G
R256	9	G
R257	9	G
R258	9	G
R259	9	G
R260	9	G
R261	9	G
R262	9	G
R263	10	G
R264	9	F
R301	8	D
R302	9	D
R303	9	D
R306	9	D
R307	9	D
R308	9	E
R309	9	E
R311	9	E
R312	9	E
R313	9	E
R314	8	E
R315	8	E
R316	9	D
R318	8	E
R323	9	D
R324	9	E
R327	10	D
R328	9	E
R329	10	D
R330	9	E
R331	10	D
R332	9	E
R335	10	E
R336	10	E
R341	9	C
R342	9	C
R345	9	C
R346	9	C
R347	10	E
R348	9	E
R351	10	F
R352	9	F
R361	2	I
R362	2	I
R373	9	F
R374	9	F
R401	7	E
R402	7	E
R404	7	E
R405	7	E
R406	8	D
R407	8	D
R408	8	D
R409	8	D
R410	8	C
R411	8	C
R413	6	C
R414	6	C
R415	6	C
R416	7	C
R417	6	C
R430	6	C
R432	7	F
R433	7	C
R434	7	E
R435	7	D
R436	7	D
R501	3	D
R502	2	E

Symbol	X	Y
R503	2	F
R504	2	F
R505	2	F
R507	2	F
R508	2	F
R509	2	F
R510	3	F
R511	3	F
R512	3	F
R513	2	G
R514	1	F
R515	1	F
R516	1	F
R517	1	D
R518	2	G
R521	2	E
R522	2	E
R523	3	E
R551	3	D
R601	7	F
R602	7	F
R603	7	F
R604	7	G
R605	7	F
R611	7	F
R612	7	F
R613	7	F
R614	7	G
R615	7	F
R620	6	G
R621	6	G
R622	6	G
R623	6	G
R624	8	G
R625	6	F
R626	6	F
R627	6	G
R628	6	G
R629	8	G
R630	4	G
R631	4	G
R651	4	E
R801	6	G
R802	6	F
R803	6	F
R804	6	E
R806	6	F
R807	5	E
R808	5	E
R809	5	E
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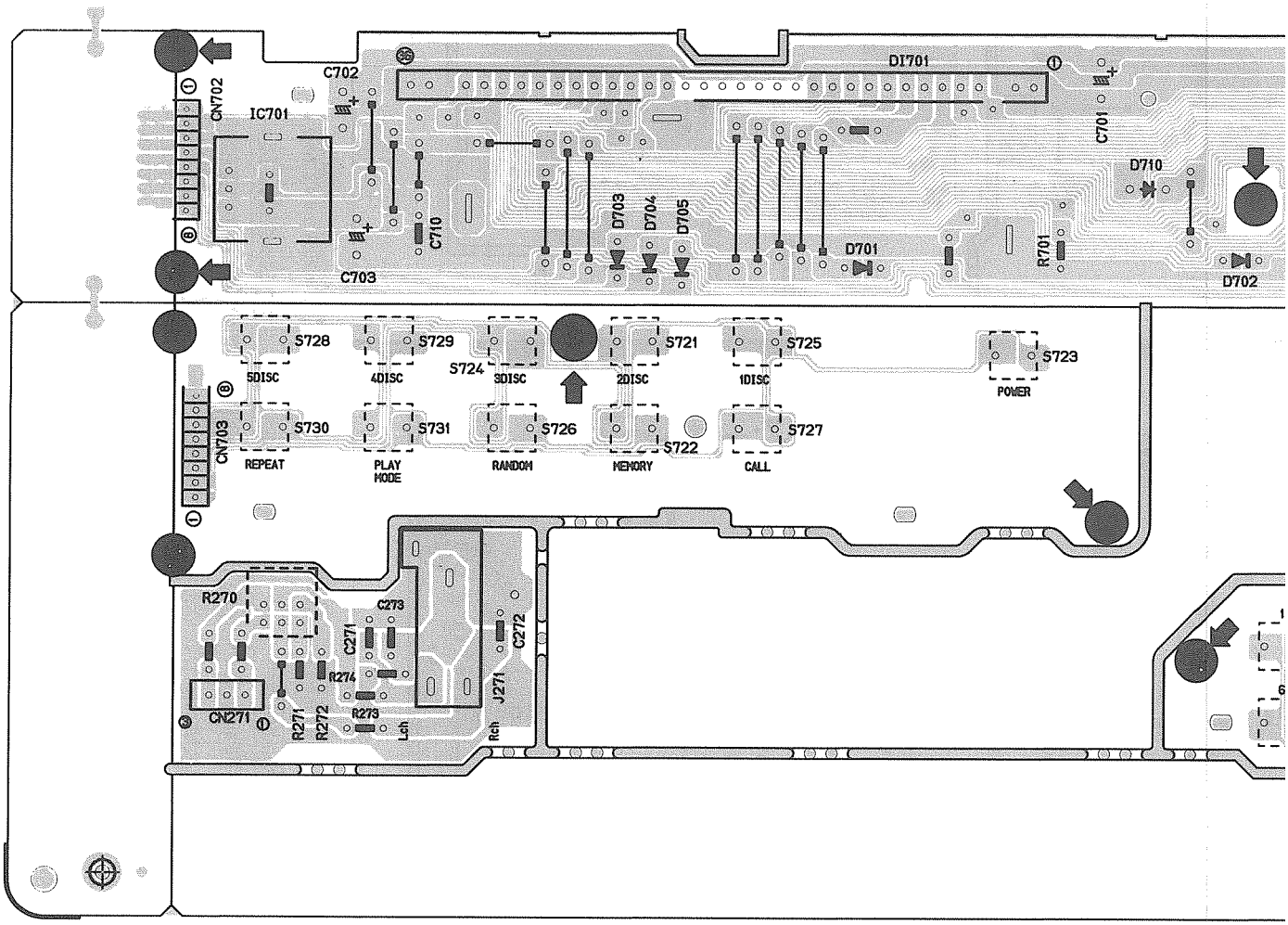
R816	6	F
R901	2	J
R902	2	J
R903	2	J
R951	9	H
R952	9	H
R953	8	H
R954	8	H
RA201	9	B
RA202	9	B
S603	1	D
SW601	8	J
SW602	10	J
X201	10	C
X301	8	E

FRONT P.C.BORD(ENN-497)



Location List (ENN-497)

Symbol	X	Y
Part	11	
C271	9	B
C272	8	B
C273	9	B
C701	6	F
C702	9	F
C703	9	E
C710	9	E
CN271	10	B
CN701	2	E
CN702	10	E
CN703	10	C
D701	7	E
D702	5	E
D703	8	E
D704	8	E
D705	8	E
D706	2	D
D707	2	D
D708	2	D
D710	6	E
DI701	6	F
IC701	9	E
J271	9	C
R270	9	C
R271	9	B
R272	9	B
R273	9	B
R274	9	B
R701	6	E
S701	2	C
S702	5	E
S703	2	E
S704	3	E
S705	4	E
S706	3	E
S707	2	B
S708	3	B
S709	3	B
S710	3	B
S711	5	B
S712	4	B
S713	5	B
S714	4	B
S715	5	B
S716	4	B
S717	5	B
S718	4	B
S721	8	D
S722	8	D
S723	6	D
S724	8	D
S725	7	D
S726	8	D
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S729	9	D
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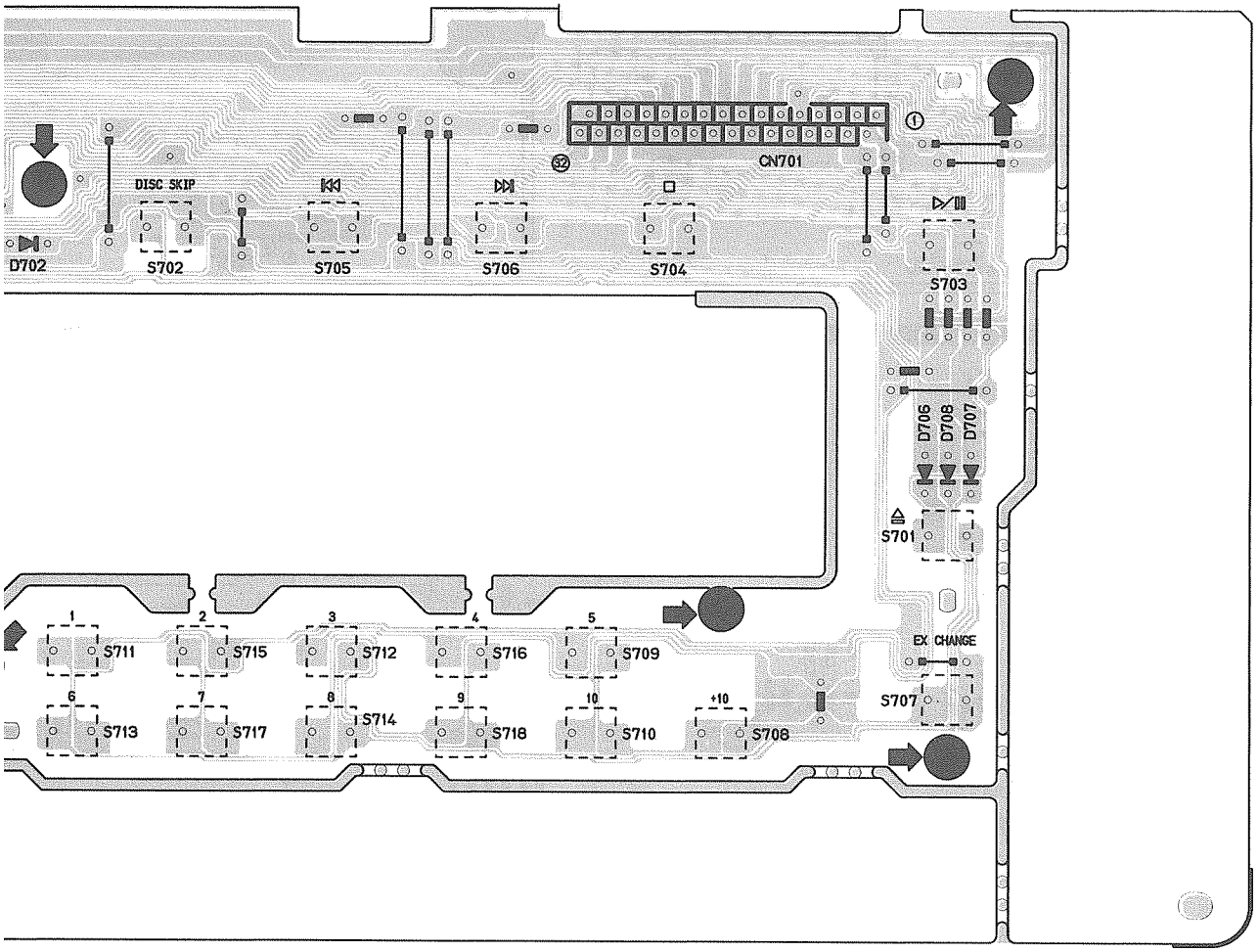


XL-F154BK
XL-F254BK

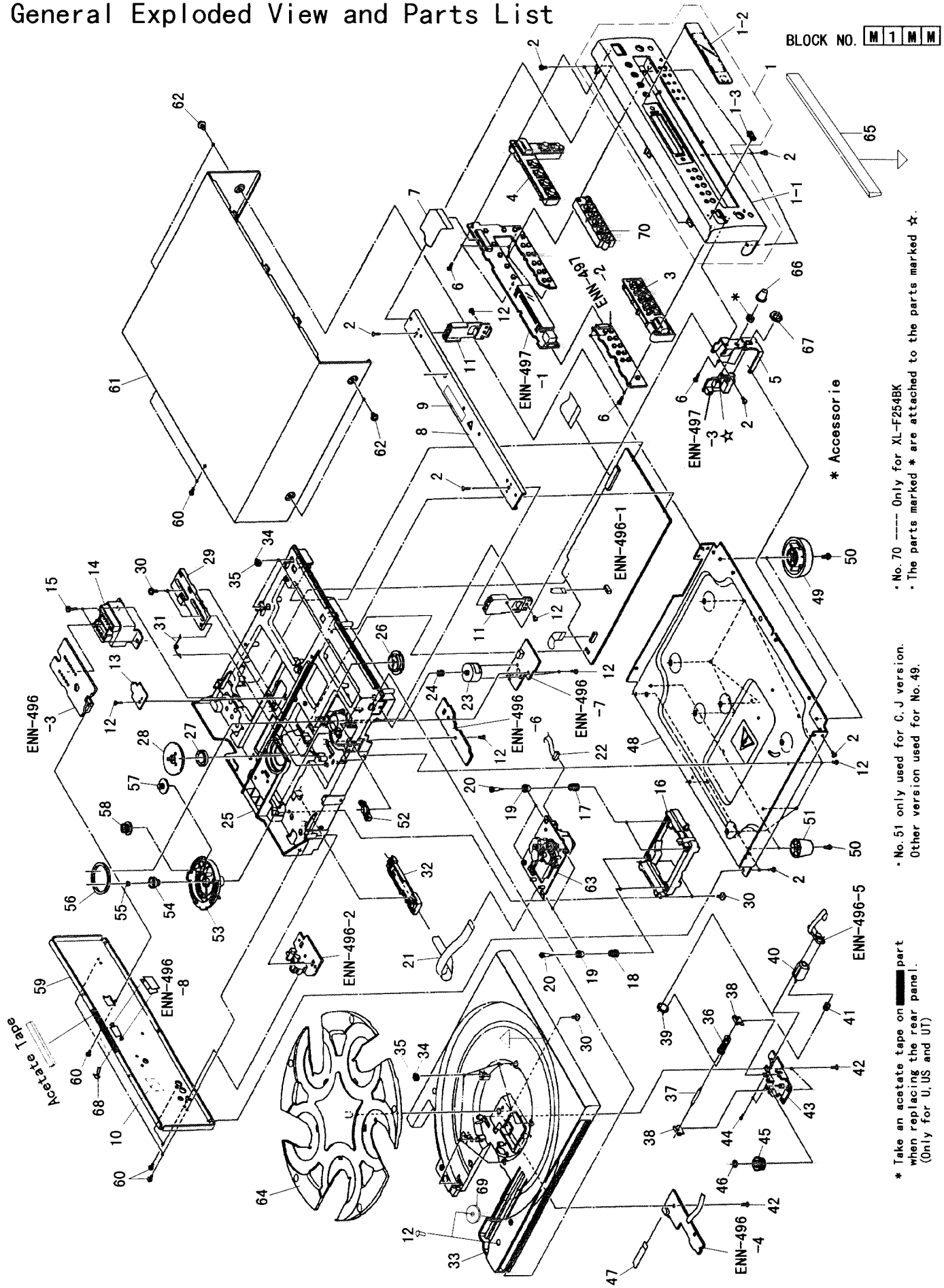
< Parts List >

The Marks for Designated Areas					
BS	the U.K.	C	Canada	EF	Continental Europe
EN	Scandinavia	G	Germany	J	the U.S.A
US	Singapore	UT	Taiwan	U	Universal
No mark indicates all area.					

– Contents –

General Exploded View and Parts List 3-2
■ Grease Point 3-4
CD Mechanism Ass'y and Parts LIst 3-6
Electrical Parts List 3-7
■ ENN-496 Main PC Board Ass'y 3-7
■ ENN-497 Front PC Board Ass'y 3-10
Accessories 3-11
Packing Materials and Part Numbers 3-12

General Exploded View and Parts List



■ Parts List (XL-F154BK)

⚠	Item	Parts Number	Parts Name	Q'ty	Description	Area
	1	EFP-XLF154BKE(S	FRONT PANEL ASS'Y	1		
	1-1	LE10074-002A	FRONT PANEL	1		
	1-2	E308113-017SM	WINDOW SCREEN	1		
	1-3	VJD5429-001	JVC MARK	1		
	2	SDSG3006Z	TAPPING SCREW	13		
	3	LE20111-003A	PUSH BUTTON	1	POWER	C, J, U, US, UT
	3	LE20111-004A	PUSH BUTTON	1	POWER	BS, EF, EN, G
	4	LE20113-001A	PUSH BUTTON	1	PLAY	
	5	LE30350-001A	HEADPHONE BRACKET	1		
	6	SDSF2608Z	SCREW	10		
	7	VWF1232-25TTB	FLAT WIRE	1		
	8	LE20117-001A	MECHA FRAME	1		
	9	E406709-001	CAUTION LABEL	1		BS, C, EF, EN, G, U, US, UT
	10	E70891-001	CLASS 1 LABEL	1		BS, EF, EN, G, U, US, UT
	11	E308111-002SS	STAY BRACKET	2		
	12	SBSF3008Z	TAPPING SCREW	15		
	13	E408395-001	PROTECTOR COVER	1		
⚠	14	ETP1000-77EAJ	POWER TRANSFORMER	1		BS, EF, EN, G
⚠		ETP1000-77JAJ	POWER TRANSFORMER	1		C, J
⚠		ETP1000-77LAJ	POWER TRANSFORMER	1		U, US, UT
	15	SBSF4008Z	TAPPING SCREW	2		
	16	E208210-002SS	ELEVATOR BASE	1		
	17	E407154-003	SPRING	2		
	18	E407154-002	SPRING	2		
	19	E407153-001SS	INSULATOR	4		
	20	E407146-001SS	SPECIAL SCREW	4		
	21	EWPZ02-001	FFC CABLE	1		
	22	EWS266-B409	SOCKET WIRE ASSY	1		
	23	RF-500TB-12560	DC MOTOR	1		
	24	E75984-222SS	MOTOR PULLEY	1		
	25	E102883-001SS	MECHA BASE	1		
	26	E306835-221SS	CD CLAMPER	1		
	27	E74897-002	MAGNET	1		
	28	E306836-223SS	YOKE PLATE	1		
	29	E208211-002SS	CAM PLATE	1		
	30	E65923-003	TAPPING SCREW	5		
	31	E408293-002	SPRING	1		
	32	E308181-221SS	FFC HOLDER	1		
	33	LE10054-003A	C.D TRAY	1		
	34	E407140-001SS	CD ROLLER	10		
	35	E407149-001SS	RUBBER TUBE	10		
	36	E408199-001SS	WORM PULLEY	1		
	37	E408197-001	PULLEY SHAFT	1		
	38	E408201-001	SHAFT GUIDE	2		
	39	E75950-003	DRIVE BELT	1		
	40	FF-130SH-11340	DC MOTOR	1		
	41	E73060-001SS	MOTOR PULLEY	1		
	42	SDSF3008M	WOOD SCREW	3		
	43	E309030-001	MOTOR BRACKET	1		
	44	SPSK2025Z	SCREW	2		
	45	E408200-001SS	WORM WHEEL	1		
	46	WDL360850	WASHER	1		
	47	VWF1007-25PPA	FFC CABLE	1		
	48	E102595-003SSF	CHASSIS BASE	1		
	49	E406379-008SS	FOOT	4		BS, EF, EN, G, U, US, UT
		E406379-008SS	FOOT	2	FRONT	C, J
	50	SBST3008Z	TAPPING SCREW	4		
	51	E47227-037	FOOT	2	REAR	C, J
	52	E309020-001SS	SWITCH LEVER	1		
	53	E309019-001SS	GEAR BASE	1		
	54	E75985-222SS	PULLEY GEAR	1		
	55	E72024-001	SPEED NUT	1		
	56	E75950-002	REEL BELT	1		
	57	E408203-001SS	CAM GEAR	1		
	58	E408202-001SS	CAM GEAR	1		
	59	E208223-043SS	REAR PANEL	1		J
		E208223-044SS	REAR PANEL	1		C
		E208223-045SS	REAR PANEL	1		BS, EF, EN, G
		E208223-046SS	REAR PANEL	1		U, US, UT

■ Parts List (XL-F154BK)

Block No. M1MM

⚠	Item	Parts Number	Parts Name	Q'ty	Description	Area
	60	E73273-006	SPECIAL SCREW	7		
	61	LE20118-002A(S)	METAL COVER	1		
	62	E406308-003	SPECIAL SCREW	4		
	63	----------	CD MECHA		See page 3-6	
	64	E102885-002	DISC TABLE	1		
	65	LE20115-001A	CD FITTING	1		
	66	LE30349-001A	VOLUME KNOB	1		
	67	E408582-001	NUT	1		
	68	SBSF2608M	TAPPING SCREW	2		U, US, UT
	69	LE40302-001A	SPACER	1		
	-	LE40210-001A	CAUTION LABEL	1		UT

■ Parts List (XL-F254BK)

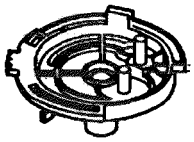
* This list describes only difference between XL-F154BK and XL-F254BK.

Block No. M1MM

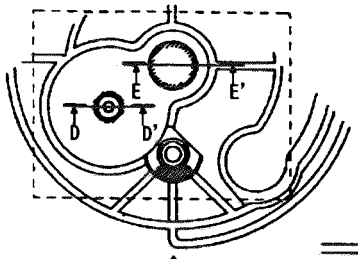
⚠	Item	Parts Number	Parts Name	Q'ty	Description	Area
	1	EFP-XLF254BKE(S	FRONT PANEL ASS'Y	1		
	1-1	LE10074-001A	FRONT PANEL	1		
	1-2	E308113-016SM	WINDOW SCREEN	1		
	6	SDSF2608Z	SCREW	11		
	59	E208223-039SS	REAR PANEL	1		J
		E208223-040SS	REAR PANEL	1		C
		E208223-041SS	REAR PANEL	1		BS, EF, EN, G
		E208223-042SS	REAR PANEL	1		U, US, UT
	70	LE30351-001A	PUSH BUTTON	1	10 KEY	

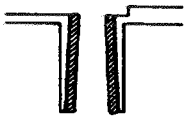
Grease Point

< DRIVE BASE >



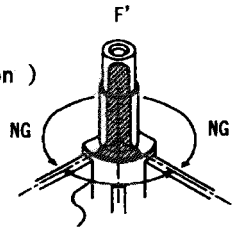
Used Floil : ①





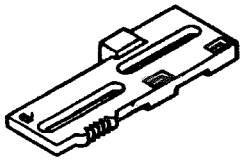
E - E'
(Across Section)

D - D'
(Across Section)



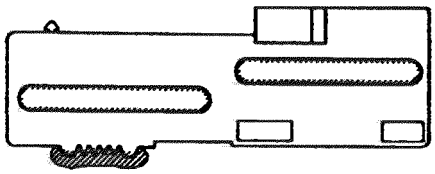
Apply Floil in ▨ area.

< CD CAM >



Used Floil : ①··· Except ★ Point
②··· ★

< TOP >



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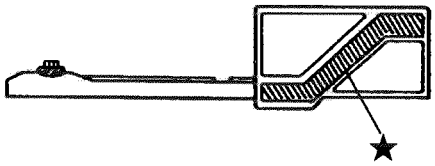

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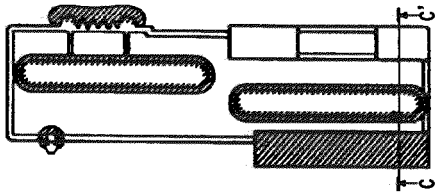

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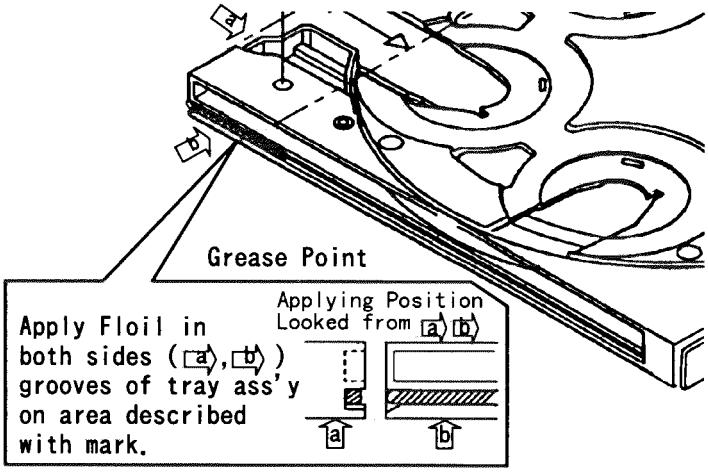
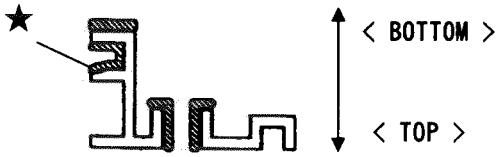


Used Floil : ②

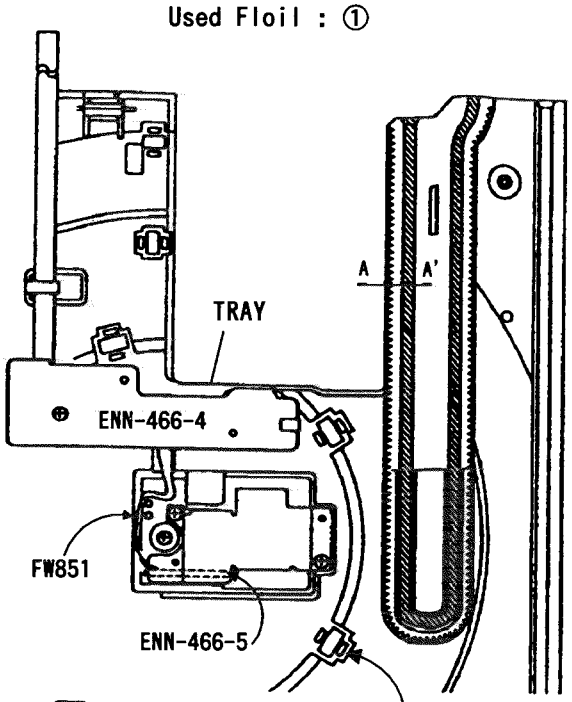


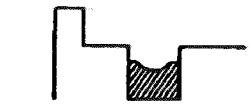
C - C'
(Across Section)

No.	Parts Name	Parts No.	Description
2	FLOIL	EBS0006-019B	E-G-474C
1	FLOIL	EBS0006-013B	E-G-31KB

< TRAY >

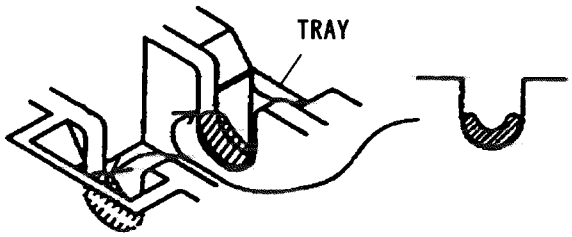
Used Floil : ①





A-A'
(Across Section)

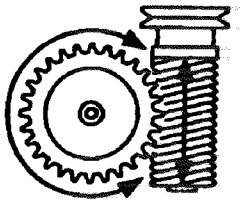
Used Floil : ①



Grease Floil on the installing grooves only of the roller.

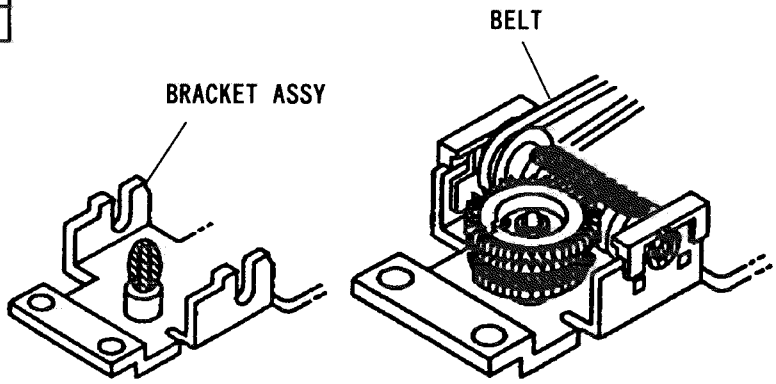
< WORM >

Uppen View



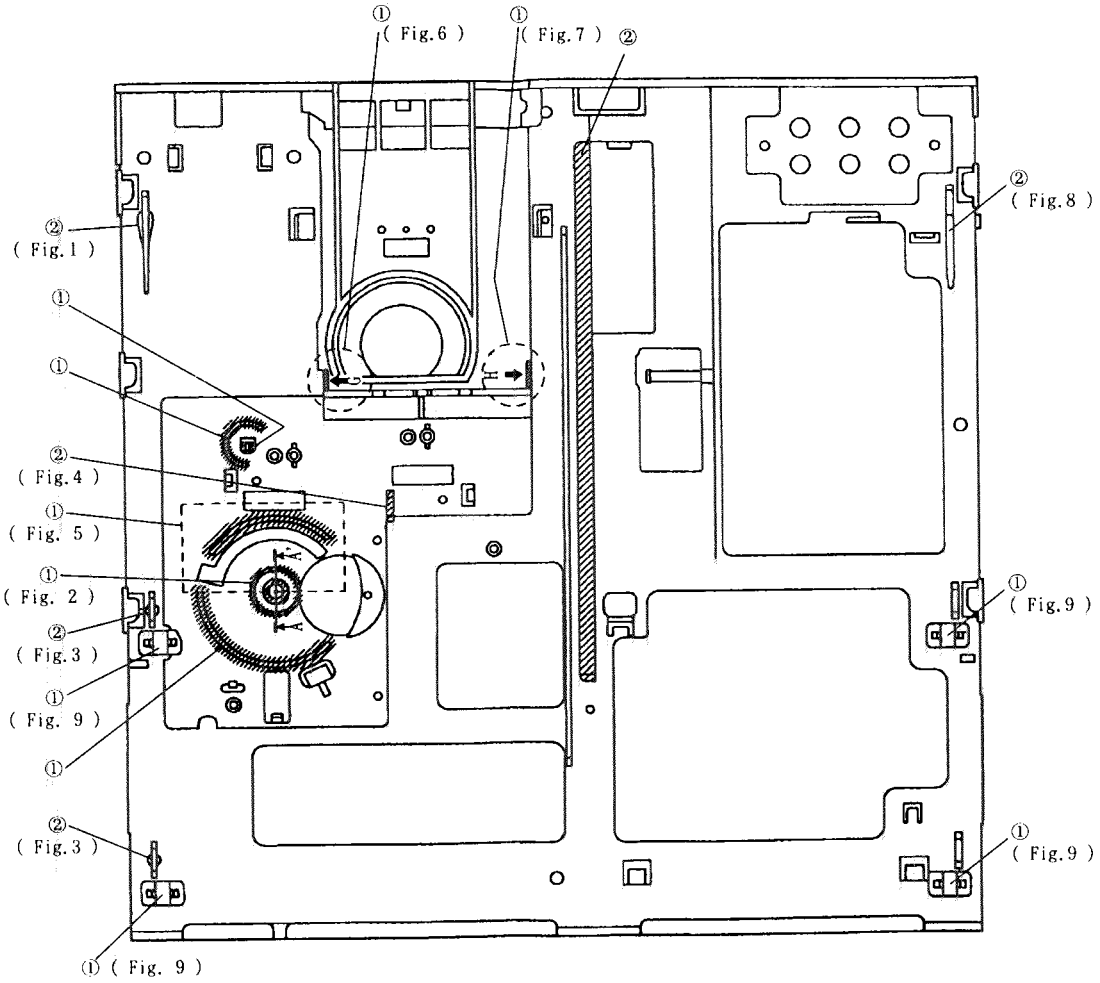
2	FLOIL	EBS0006-019B	E-G-474C
1	FLOIL	EBS0006-013B	E-G-31KB
No.	Parts Name	Parts No.	Description

Used Floil : ①



Grease Floil on the both gears.
(Worm Gear)

Grease Point



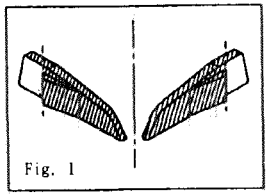


Fig. 1

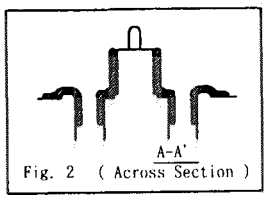


Fig. 2 (Across Section)

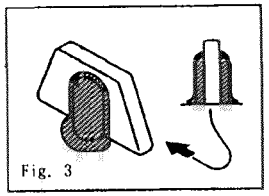


Fig. 3

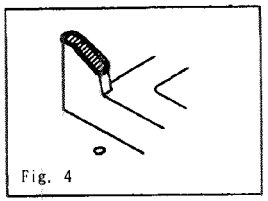


Fig. 4

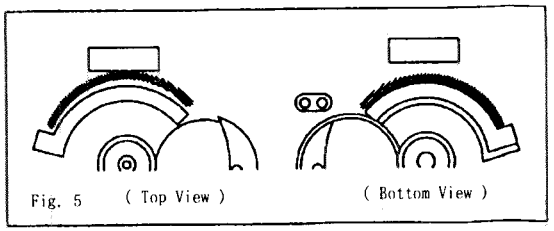


Fig. 5 (Top View) (Bottom View)

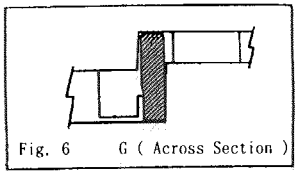


Fig. 6 G (Across Section)

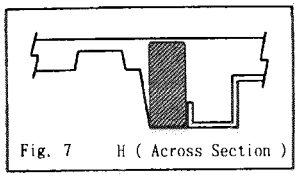


Fig. 7 H (Across Section)

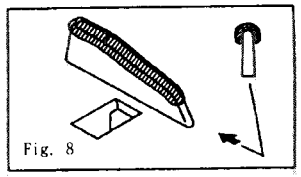


Fig. 8

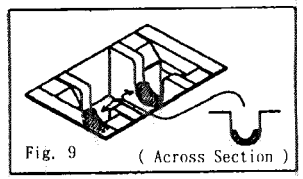


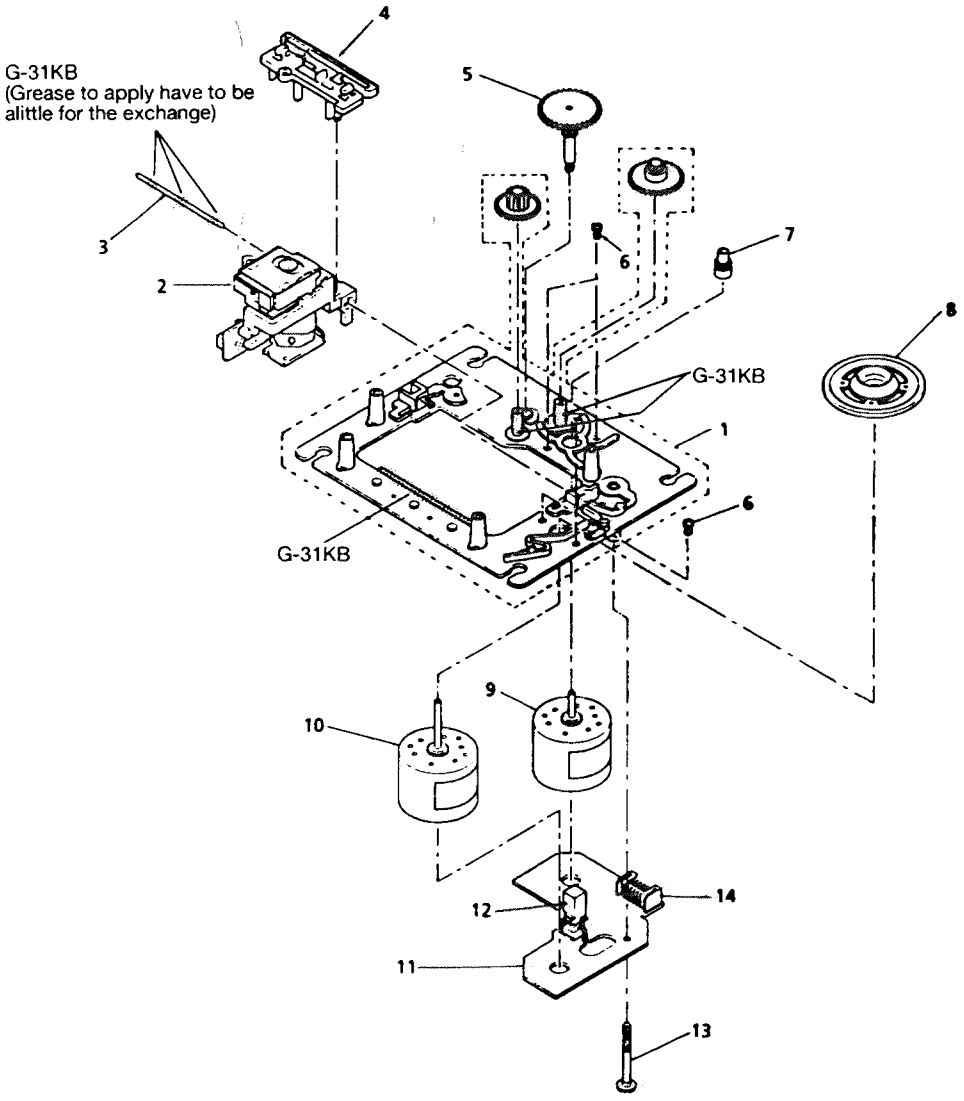
Fig. 9 (Across Section)

No.	Parts Name	Parts No.	Description
2	FLOIL	EBS0006-019B	E-G-474C
1	FLOIL	EBS0006-013B	E-G-31KB

CD Mechanism Ass'y and Parts List

■ Grease Point

Block No. M2MM



■ Parts List (CD Mechanism Ass'y)

Block No. M2MM

Item	Part Number	Part Name	Q'ty	Description	Area
1	E102501-221SS	MECHANISM BASE ASSY	1		
2	OPTIMA-6S	PICK UP ASSY	1		
3	E406777-001	SHAFT	1		
4	E307746-001	CD RACK	1		
5	E307745-221SS	GEAR (3)	1		
6	SDSP2003N	SCREW	4		
7	E406750-001	PINION GEAR	1		
8	E75807-302	TURN TABLE	1		
9	MDN-4RA3ETA-1	FEED MOTOR	1		
10	E406783-001	SPINDLE MOTOR	1		
11	EMW10190-001(S)	CIRCUIT BOARD	1		
12	ESB1100-005	LEAF SWITCH	1		
13	E75832-001	SCREW	1		
14	EMV5109-006B	PLUG ASSY	1	6PIN	

■ Electrical Parts List (ENN-496)

⚠	Item	Parts Number	Description	Area
		I.C.S		
	IC201	MN171602JYK2	I.C(MICRO-COMPUTER)	
	IC202	PST9140T	I.C(MONO-ANALOG)	
	IC251	NJM4580DD	I.C(MONO-ANALOG)	
	IC301	MN35503	I.C(DIGI-MOS)	
	IC303	NJM4580DD	I.C(MONO-ANALOG)	
	IC401	MN662720RB	I.C(DIGI-MOS)	
	IC501	AN8806SB	I.C(MONO-ANALOG)	
	IC601	NJM4580L	I.C(MONO-ANALOG)	
	IC801	BA6897FPW	I.C(MONO-ANALOG)	
		DIODES		
	D101	1SR35-200A	SI.DIODE	
	D102	1SR35-200A	SI.DIODE	
	D103	1SR35-200A	SI.DIODE	
	D104	1SR35-200A	SI.DIODE	
	D111	MTZ5.6JA	ZENER DIODE	
	D121	1SS133	SI.DIODE	
	D131	1SR35-200A	SI.DIODE	
	D132	1SR35-200A	SI.DIODE	
	D133	1SR35-200A	SI.DIODE	
	D134	MTZ30JC	ZENER DIODE	
	D201	1SS133	SI.DIODE	
	D202	1SS133	SI.DIODE	
	D203	1SS133	SI.DIODE	
		TRANSISTORS		
	Q111	2SB1565(E,F)	SI.TRANSISTOR	
	Q112	2SD1302	SI.TRANSISTOR	
	Q113	2SB1357(E,F)	SI.TRANSISTOR	
	Q121	2SA933S(RS)	SI.TRANSISTOR	
	Q122	DTC114YS	DIGITAL TRANSISTOR	
	Q131	2SA933S(RS)	SI.TRANSISTOR	
	Q132	2SD1302	SI.TRANSISTOR	
	Q133	2SD1302	SI.TRANSISTOR	
	Q134	DTA114YS	DIGITAL TRANSISTOR	
	Q201	DTA114YS	DIGITAL TRANSISTOR	
	Q202	DTC144ES	DIGITAL TRANSISTOR	
	Q373	2SD1302	SI.TRANSISTOR	
	Q374	2SD1302	SI.TRANSISTOR	
	Q501	2SA950(O,Y)	SI.TRANSISTOR	
	Q601	2SC2060(Q,R)	SI.TRANSISTOR	
	Q602	2SA934(Q,R)	SI.TRANSISTOR	
	Q611	2SC2060(Q,R)	SI.TRANSISTOR	
	Q612	2SA934(Q,R)	SI.TRANSISTOR	
	Q651	2SC1740S(R,S)	SI.TRANSISTOR	
		CAPACITORS		
	C001	QCHB1EZ-223	0.022MF 25V CER.CAP.	C
	C001	QCHB1EZ-223	0.022MF 25V CER.CAP.	J
	C002	QCHB1EZ-223	0.022MF 25V CER.CAP.	C
	C002	QCHB1EZ-223	0.022MF 25V CER.CAP.	J
	C003	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	BS
	C003	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	EF
	C003	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	EN
	C003	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	G
	C003	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	U
	C003	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	US
	C003	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	UT
	C004	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	BS
	C004	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	EF
	C004	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	EN
	C004	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	G
	C004	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	U
	C004	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	US
	C004	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	UT
	C101	QETB1CM-228	2200MF 16V AL E.CAP.	BS
	C101	QETB1CM-228	2200MF 16V AL E.CAP.	C
	C101	QETB1CM-228	2200MF 16V AL E.CAP.	EF
	C101	QETB1CM-228	2200MF 16V AL E.CAP.	EN
	C101	QETB1CM-228	2200MF 16V AL E.CAP.	G
	C101	QETB1CM-228	2200MF 16V AL E.CAP.	J
	C101	QETB1CM-338EE	3300MF 16V E.CAP.	U

⚠	Item	Parts Number	Description	Area
	C101	QETB1CM-338EE	3300MF 16V E.CAP.	US
	C101	QETB1CM-338EE	3300MF 16V E.CAP.	UT
	C102	QETB1CM-477M	470MF 16V E.CAP.	
	C108	QCF21HP-223A	0.022MF 50V CER.CAP.	
	C111	QETB1HM-225	2.2MF 50V AL E.CAP.	
	C112	QETB1AM-476	47MF 10V E.CAP.	
	C113	QETB1AM-476	47MF 10V E.CAP.	
	C121	QETB1CM-227	220MF 16V AL E.CAP.	
	C122	QETB1CM-226	22MF 16V E.CAP.	
	C131	QETB1EM-476	47MF 25V AL E.CAP.	
	C132	QETB1HM-476	47MF 50V E.CAP.	
	C133	QETB1HM-106	10MF 50V E.CAP.	
	C196	QCHB1EZ-223	0.022MF 25V CER.CAP.	
	C197	QCF21HP-223A	0.022MF 50V CER.CAP.	
	C198	QCF21HP-103A	0.01MF 50V CER.CAP.	BS
	C198	QCF21HP-103A	0.01MF 50V CER.CAP.	EF
	C198	QCF21HP-103A	0.01MF 50V CER.CAP.	EN
	C198	QCF21HP-103A	0.01MF 50V CER.CAP.	G
	C199	QCF21HP-223A	0.022MF 50V CER.CAP.	
	C201	QFV81HJ-224	0.22MF 50V THIN FILM CAP.	
	C202	QETB1AM-476	47MF 10V E.CAP.	
	C203	QETB1EM-106	10MF 25V AL E.CAP.	
	C204	QCHB1EZ-223	0.022MF 25V CER.CAP.	
	C205	QCBB1HK-331Y	330PF 50V CER.CAP.	
	C206	QCF31HP-102Z	1000PF 50V CER.CAP.	
	C251	QETB1EM-106	10MF 25V AL E.CAP.	
	C252	QETB1EM-106	10MF 25V AL E.CAP.	
	C253	QCSB1HJ-330Y	33PF 50V CER.CAP.	
	C254	QCSB1HJ-330Y	33PF 50V CER.CAP.	
	C257	QETB1HM-475E	4.7MF 50V E.CAP.	
	C258	QETB1HM-475E	4.7MF 50V E.CAP.	
	C301	QCZ0202-155	1.5MF 25V CER.RES.	
	C302	QETB0JM-227	220MF 6.3V E.CAP.	
	C303	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	
	C305	QETB0JM-477	470MF 6.3V AL E.CAP.	
	C306	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	
	C308	QCT30CH-180Y	18PF 50V CER.CAP.	
	C309	QCT30CH-180Y	18PF 50V CER.CAP.	
	C310	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	
	C316	QETB1AM-476	47MF 10V E.CAP.	
	C321	QFN31HJ-392Z	3900PF 50V MYLAR CAP.	
	C322	QFN31HJ-392Z	3900PF 50V MYLAR CAP.	
	C323	QFN31HJ-333Z	0.033MF 50V MYLAR CAP.	
	C324	QFN31HJ-333Z	0.033MF 50V MYLAR CAP.	
	C327	QFP81HJ-181	180PF 50V POLYPROPY.FILM	
	C328	QFP81HJ-181	180PF 50V POLYPROPY.FILM	
	C329	QETB1EM-226N	22MF 25V E.CAP.	
	C330	QETB1EM-226N	22MF 25V E.CAP.	
	C331	QFN31HJ-103Z	0.01MF 50V MYLAR CAP.	
	C332	QFN31HJ-103Z	0.01MF 50V MYLAR CAP.	
	C338	QCVB1CM-103Y	0.01MF 16V CER.CAP.	
	C343	QETB1EM-476	47MF 25V AL E.CAP.	
	C344	QETB1EM-476	47MF 25V AL E.CAP.	
	C401	QCS31HJ-471Z	470PF 50V CER.CAP.	
	C402	QCHB1EZ-223	0.022MF 25V CER.CAP.	
	C403	QFN81HJ-223	0.022MF 50V METAL.MYLAR	
	C404	QCHB1EZ-223	0.022MF 25V CER.CAP.	
	C405	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	
	C408	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	
	C409	QETB1AM-476	47MF 10V E.CAP.	
	C411	QETB1AM-476	47MF 10V E.CAP.	
	C412	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	
	C413	QCF21HP-223A	0.022MF 50V CER.CAP.	
	C414	QCHB1EZ-223	0.022MF 25V CER.CAP.	
	C415	QCHB1EZ-223	0.022MF 25V CER.CAP.	
	C417	QCBB1HK-221Y	220PF 50V CER.CAP.	
	C421	QCSB1HJ-120Y	12PF 50V CER.CAP.	
	C426	QCSB1HJ-120Y	12PF 50V CER.CAP.	
	C501	QETB1AM-107	100MF 10V AL E.CAP.	
	C502	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	

■ Electrical Parts List (ENN-496)

⚠	Item	Parts Number	Description	Area
	C504	QETB1AM-107	100MF 10V AL E.CAP.	
	C505	QER51EM-106	10MF 25V E.CAP.	
	C506	QCHB1EZ-223	0.022MF 25V CER.CAP.	
	C508	QETB1HM-105	1MF 50V AL E.CAP.	
	C509	QCBB1HK-101Y	100PF 50V CER.CAP.	
	C510	QFN31HJ-273Z	0.027MF 50V MYLAR CAP.	
	C511	QFN81HJ-472	4700PF 50V MYLAR CAP.	
	C512	QFN31HJ-103Z	0.01MF 50V MYLAR CAP.	
	C514	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	
	C515	QCHB1EZ-223	0.022MF 25V CER.CAP.	
	C517	QCF21HP-223A	0.022MF 50V CER.CAP.	
	C518	QCF21HP-223A	0.022MF 50V CER.CAP.	
	C519	QCS21HJ-271A	270PF 50V CER.CAP.	
	C520	QCSB1HJ-470	47PF 50V CER.CAP.	
	C521	QCGB1HK-102	1000PF 50V CER.CAP.	
	C522	QCF21HP-223A	0.022MF 50V CER.CAP.	
	C523	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	
	C524	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	
	C531	QCGB1HK-102	1000PF 50V CER.CAP.	
	C532	QCGB1HK-102	1000PF 50V CER.CAP.	
	C533	QCBB1HK-331Y	330PF 50V CER.CAP.	
	C551	QCBB1HK-101Y	100PF 50V CER.CAP.	
	C601	QCBB1HK-101Y	100PF 50V CER.CAP.	
	C602	QCHB1EZ-223	0.022MF 25V CER.CAP.	
	C603	QCHB1EZ-223	0.022MF 25V CER.CAP.	
	C604	QETB1CM-476	47MF 16V AL E.CAP.	
	C605	QETB1CM-476	47MF 16V AL E.CAP.	
	C611	QCBB1HK-101Y	100PF 50V CER.CAP.	
	C803	QFN31HJ-103Z	0.01MF 50V MYLAR CAP.	
	C804	QFN81HJ-183	0.018MF 50V METAL.MYLAR	
	C806	QFN31HJ-273Z	0.027MF 50V MYLAR CAP.	
	C810	QCZ0202-155	1.5MF 25V CER.RES.	
	C951	QCHB1EZ-223	0.022MF 25V CER.CAP.	
		RESISTORS		
	R001	QRD161J-1R2YTT	1.2 1/6W CARBON RES.	J
	R002	QRD161J-1R2YTT	1.2 1/6W CARBON RES.	J
⚠	R101	PTH8L07BB2R2N1B	POSITIVE THE	BS
⚠	R101	PTH8L07BB2R2N1B	POSITIVE THE	C
⚠	R101	PTH8L07BB2R2N1B	POSITIVE THE	EF
⚠	R101	PTH8L07BB2R2N1B	POSITIVE THE	EN
⚠	R101	PTH8L07BB2R2N1B	POSITIVE THE	G
⚠	R101	PTH8L07BB2R2N1B	POSITIVE THE	U
⚠	R101	PTH8L07BB2R2N1B	POSITIVE THE	US
⚠	R101	PTH8L07BB2R2N1B	POSITIVE THE	UT
⚠	R102	PTH8L07BB2R2N1B	POSITIVE THE	BS
⚠	R102	PTH8L07BB2R2N1B	POSITIVE THE	C
⚠	R102	PTH8L07BB2R2N1B	POSITIVE THE	EF
⚠	R102	PTH8L07BB2R2N1B	POSITIVE THE	EN
⚠	R102	PTH8L07BB2R2N1B	POSITIVE THE	G
⚠	R102	PTH8L07BB2R2N1B	POSITIVE THE	U
⚠	R102	PTH8L07BB2R2N1B	POSITIVE THE	US
⚠	R102	PTH8L07BB2R2N1B	POSITIVE THE	UT
	R111	QRD161J-222	2.2K 1/6W CARBON RES.	
	R112	QRD161J-221	220 1/6W CARBON RES.	
	R113	QRD161J-221	220 1/6W CARBON RES.	
	R114	QRD161J-202	2K 1/6W CARBON RES.	
	R115	QRD161J-103	10K 1/6W CARBON RES.	
	R116	QRD161J-122	1.2K 1/6W CARBON RES.	
	R117	QRD167J-1R5	1.5 1/6W CARBON RES.	
	R118	QRD167J-1R5	1.5 1/6W CARBON RES.	
	R119	QRD161J-202	2K 1/6W CARBON RES.	
	R121	QRD161J-331	330 1/6W CARBON RES.	
	R122	QRD161J-123	12K 1/6W CARBON RES.	
	R123	QRD161J-273	27K 1/6W CARBON RES.	
	R124	QRD161J-221	220 1/6W CARBON RES.	
⚠	R131	QRZ0077-560	56 1/4W FUSIBLE RES.	BS
⚠	R131	QRZ0077-560	56 1/4W FUSIBLE RES.	C
⚠	R131	QRZ0077-560	56 1/4W FUSIBLE RES.	EF
⚠	R131	QRZ0077-560	56 1/4W FUSIBLE RES.	EN
⚠	R131	QRZ0077-560	56 1/4W FUSIBLE RES.	G

⚠	Item	Parts Number	Description	Area
⚠	R131	QRZ0077-560	56 1/4W FUSIBLE RES.	U
⚠	R131	QRZ0077-560	56 1/4W FUSIBLE RES.	US
⚠	R131	QRZ0077-560	56 1/4W FUSIBLE RES.	UT
	R132	QRD161J-362	3.6K 1/6W CARBON RES.	
	R133	QRD161J-362	3.6K 1/6W CARBON RES.	
	R134	QRD167J-121	120 1/6W CARBON RES.	
	R135	QRD161J-911	910 1/6W CARBON RES.	
	R136	QRD161J-911	910 1/6W CARBON RES.	
	R137	QRD161J-103	10K 1/6W CARBON RES.	
	R138	QRD161J-103	10K 1/6W CARBON RES.	
	R139	QRD161J-103	10K 1/6W CARBON RES.	
	R151	QRD167J-153	15K 1/6W CARBON RES.	
	R201	QRD161J-103	10K 1/6W CARBON RES.	
	R202	QRD161J-102	1K 1/6W CARBON RES.	
	R203	QRD161J-472	4.7K 1/6W CARBON RES.	
	R204	QRD161J-103	10K 1/6W CARBON RES.	
	R205	QRD161J-103	10K 1/6W CARBON RES.	
	R206	QRD161J-103	10K 1/6W CARBON RES.	
	R207	QRD161J-103	10K 1/6W CARBON RES.	
	R210	QRD161J-472	4.7K 1/6W CARBON RES.	
	R251	QRD161J-221	220 1/6W CARBON RES.	
	R252	QRD161J-221	220 1/6W CARBON RES.	
	R255	QRD161J-823	82K 1/6W CARBON RES.	
	R256	QRD161J-823	82K 1/6W CARBON RES.	
	R257	QRD167J-154	150K 1/6W CARBON RES.	
	R258	QRD167J-154	150K 1/6W CARBON RES.	
	R259	QRD161J-473	47K 1/6W CARBON RES.	
	R260	QRD161J-473	47K 1/6W CARBON RES.	
	R261	QRD161J-103	10K 1/6W CARBON RES.	
	R262	QRD161J-103	10K 1/6W CARBON RES.	
	R263	QRD161J-561	560 1/6W CARBON RES.	
	R264	QRD161J-561	560 1/6W CARBON RES.	
	R301	QRD167J-560	56 1/6W CARBON RES.	
	R302	QRD161J-163	16K 1/6W CARBON RES.	
	R303	QRD161J-243	24K 1/6W CARBON RES.	
	R306	QRD161J-163	16K 1/6W CARBON RES.	
	R307	QRD161J-243	24K 1/6W CARBON RES.	
	R308	QRD161J-243	24K 1/6W CARBON RES.	
	R309	QRD161J-163	16K 1/6W CARBON RES.	
	R311	QRD161J-101	100 1/6W CARBON RES.	
	R312	QRD161J-243	24K 1/6W CARBON RES.	
	R313	QRD161J-163	16K 1/6W CARBON RES.	
	R314	QRD161J-271	270 1/6W CARBON RES.	
	R315	QRD161J-101	100 1/6W CARBON RES.	
	R316	QRD161J-271	270 1/6W CARBON RES.	
	R318	QRD161J-102	1K 1/6W CARBON RES.	
	R323	QRD167J-682	6.8K 1/6W CARBON RES.	
	R324	QRD167J-682	6.8K 1/6W CARBON RES.	
	R327	QRD161J-362	3.6K 1/6W CARBON RES.	
	R328	QRD161J-362	3.6K 1/6W CARBON RES.	
	R329	QRD161J-183	18K 1/6W CARBON RES.	
	R330	QRD161J-183	18K 1/6W CARBON RES.	
	R331	QRD161J-162	1.6K 1/6W CARBON RES.	
	R332	QRD161J-162	1.6K 1/6W CARBON RES.	
	R335	QRD161J-273	27K 1/6W CARBON RES.	
	R336	QRD161J-273	27K 1/6W CARBON RES.	
	R341	QRD161J-271	270 1/6W CARBON RES.	
	R342	QRD161J-271	270 1/6W CARBON RES.	
	R347	QRD161J-561	560 1/6W CARBON RES.	
	R348	QRD161J-561	560 1/6W CARBON RES.	
	R351	QRD161J-103	10K 1/6W CARBON RES.	
	R352	QRD161J-103	10K 1/6W CARBON RES.	
	R361	QRD161J-101	100 1/6W CARBON RES.	
	R362	QRD161J-101	100 1/6W CARBON RES.	
	R373	QRD161J-474	470K 1/6W CARBON RES.	
	R374	QRD161J-274	270K 1/6W CARBON RES.	
	R401	QRD161J-102	1K 1/6W CARBON RES.	
	R402	QRD161J-102	1K 1/6W CARBON RES.	
	R404	QRD161J-102	1K 1/6W CARBON RES.	
	R405	QRD161J-102	1K 1/6W CARBON RES.	

■ Electrical Parts List (ENN-496)

⚠	Item	Parts Number	Description	Area
	R406	QRD161J-102	1K 1/6W CARBON RES.	
	R407	QRD161J-102	1K 1/6W CARBON RES.	
	R408	QRD161J-102	1K 1/6W CARBON RES.	
	R409	QRD161J-102	1K 1/6W CARBON RES.	
	R410	QRD161J-102	1K 1/6W CARBON RES.	
	R411	QRD161J-102	1K 1/6W CARBON RES.	
	R413	QRD167J-155	1.5M 1/6W CARBON RES.	
	R414	QRD161J-683	68K 1/6W CARBON RES.	
	R416	QRD161J-471	470 1/6W CARBON RES.	
	R417	QRD161J-124	120K 1/6W CARBON RES.	
	R430	QRD161J-2R2	2.2 1/6W CARBON RES.	
	R432	QRD161J-2R2	2.2 1/6W CARBON RES.	
	R433	QRD161J-102	1K 1/6W CARBON RES.	
	R434	QRD161J-102	1K 1/6W CARBON RES.	
	R435	QRD161J-102	1K 1/6W CARBON RES.	
	R436	QRD161J-102	1K 1/6W CARBON RES.	
	R502	QRD167J-562	5.6K 1/6W CARBON RES.	
	R505	QRD161J-274	270K 1/6W CARBON RES.	
	R507	QRD167J-154	150K 1/6W CARBON RES.	
	R508	QRD161J-273	27K 1/6W CARBON RES.	
	R509	QRD161J-114	110K 1/6W CARBON RES.	
	R510	QRD161J-104	100K 1/6W CARBON RES.	
	R511	QRD161J-473	47K 1/6W CARBON RES.	
	R512	QRD167J-822	8.2K 1/6W CARBON RES.	
	R513	QRD167J-121	120 1/6W CARBON RES.	
	R514	QRD161J-470	47 1/6W CARBON RES.	
	R515	QRD161J-470	47 1/6W CARBON RES.	
	R516	QRD161J-470	47 1/6W CARBON RES.	
	R517	QRD161J-2R2	2.2 1/6W CARBON RES.	
	R518	QRD161J-910Y	91 1/6W CARBON RES.	
	R521	QRD161J-622	6.2K 1/6W CARBON RES.	
	R523	QRD161J-125	1.2M 1/6W CARBON RES.	
	R551	QRD161J-102	1K 1/6W CARBON RES.	
	R601	QRD161J-203	20K 1/6W CARBON RES.	
	R602	QRD161J-203	20K 1/6W CARBON RES.	
	R603	QRD167J-153	15K 1/6W CARBON RES.	
	R604	QRD167J-151	150 1/6W CARBON RES.	
	R605	QRD167J-153	15K 1/6W CARBON RES.	
	R611	QRD161J-183	18K 1/6W CARBON RES.	
	R612	QRD161J-183	18K 1/6W CARBON RES.	
	R613	QRD161J-243	24K 1/6W CARBON RES.	
	R614	QRD167J-151	150 1/6W CARBON RES.	
	R615	QRD161J-243	24K 1/6W CARBON RES.	
	R620	QRD167J-151	150 1/6W CARBON RES.	
	R621	QRD167J-151	150 1/6W CARBON RES.	
	R622	QRD167J-151	150 1/6W CARBON RES.	
	R623	QRD167J-151	150 1/6W CARBON RES.	
	R624	QRD167J-151	150 1/6W CARBON RES.	
	R625	QRD167J-562	5.6K 1/6W CARBON RES.	
	R626	QRD167J-562	5.6K 1/6W CARBON RES.	
	R627	QRD167J-562	5.6K 1/6W CARBON RES.	
	R628	QRD167J-562	5.6K 1/6W CARBON RES.	
	R629	QRD167J-562	5.6K 1/6W CARBON RES.	
	R630	QRD167J-562	5.6K 1/6W CARBON RES.	
	R631	QRD167J-151	150 1/6W CARBON RES.	
	R651	QRD161J-103	10K 1/6W CARBON RES.	
	R801	QRD161J-182	1.8K 1/6W CARBON RES.	
	R802	QRD161J-472	4.7K 1/6W CARBON RES.	
	R803	QRD161J-112	1.1K 1/6W CARBON RES.	
	R804	QRD167J-113	11K 1/6W CARBON RES.	
	R806	QRD161J-683	68K 1/6W CARBON RES.	
	R807	QRD167J-332	3.3K 1/6W CARBON RES.	
	R808	QRD167J-822	8.2K 1/6W CARBON RES.	
	R809	QRD167J-223	22K 1/6W CARBON RES.	
	R810	QRD161J-472	4.7K 1/6W CARBON RES.	
	R811	QRD167J-153	15K 1/6W CARBON RES.	
	R812	QRD161J-752	7.5K 1/6W CARBON RES.	
	R814	QRD161J-363	36K 1/6W CARBON RES.	
	R901	QRD161J-221	220 1/6W CARBON RES.	
	R902	QRD161J-221	220 1/6W CARBON RES.	

⚠	Item	Parts Number	Description	Area
	R903	QRD161J-101	100 1/6W CARBON RES.	
	R951	QRD161J-331	330 1/6W CARBON RES.	
	R952	QRD161J-123	12K 1/6W CARBON RES.	
	R953	QRD161J-331	330 1/6W CARBON RES.	
	R954	QRD161J-472	4.7K 1/6W CARBON RES.	
		OTHERS		
		EMW10593-101	PRINTED BOARD	
		E70306-001	HEAT SINK	
		QWE881-12RR	VINYL WIRE	U
		QWE881-12RR	VINYL WIRE	US
		QWE881-12RR	VINYL WIRE	UT
		QWE886-12RR	VINYL WIRE	U
		QWE886-12RR	VINYL WIRE	US
		QWE886-12RR	VINYL WIRE	UT
		QWE888-12RR	VINYL WIRE	U
		QWE888-12RR	VINYL WIRE	US
		QWE888-12RR	VINYL WIRE	UT
		SBSE3008Z	SCREW	
⚠	J001	QMCB001-E02H	AC SOCKET	BS
⚠	J001	QMCB001-E02H	AC SOCKET	EF
⚠	J001	QMCB001-E02H	AC SOCKET	EN
⚠	J001	QMCB001-E02H	AC SOCKET	G
⚠	J001	QMCB001-E02H	AC SOCKET	U
⚠	J001	QMCB001-E02H	AC SOCKET	US
⚠	J001	QMCB001-E02H	AC SOCKET	UT
⚠	J001	QMCB001-E03H	AC INLET	C
⚠	J001	QMCB001-E03H	AC INLET	J
	J101	QMS3501-020	PIN JACK	
	J102	EMM00YV-210A	PIN JACK	
	K401	ENZ8101-007	INDUCTOR	
	K402	ENZ8101-007	INDUCTOR	
	K403	ENZ8101-007	INDUCTOR	
⚠	P051	QSS1L22-E01	SLIDE SWITCH	U
⚠	P051	QSS1L22-E01	SLIDE SWITCH	US
⚠	P051	QSS1L22-E01	SLIDE SWITCH	UT
	S601	ESS1200-002	LEVER SWITCH	
	S602	ESS1200-002	LEVER SWITCH	
	S603	ESS1200-002	LEVER SWITCH	
	X201	ECX0060-000EM	CERAMIC RESONATOR	
	X301	VCX5016-934V	CRYSTAL	
	CN103	EMV5109-006A	CONNECT TERMINAL	
	CN104	EMV7144-015	F.P.C. PLUG	
	CN105	EMV7144-007	CONNECT TERMINAL	
	CN106	VMC0163-R32	CONNECT TERMINAL	
	CN110	EMV7145-004Z	SOCKET ASSY	
	CN801	EMV7144-007R	CONNECT TERMINAL	
⚠	CP101	ICP-N10	I.C. PROTECTOR	BS
⚠	CP101	ICP-N10	I.C. PROTECTOR	C
⚠	CP101	ICP-N10	I.C. PROTECTOR	EF
⚠	CP101	ICP-N10	I.C. PROTECTOR	EN
⚠	CP101	ICP-N10	I.C. PROTECTOR	G
⚠	CP101	ICP-N10	I.C. PROTECTOR	U
⚠	CP101	ICP-N10	I.C. PROTECTOR	US
⚠	CP101	ICP-N10	I.C. PROTECTOR	UT
	FW101	EWR36D-13LS	CORD	
	FW102	EWR33D-30LS	FLAT WIRE	
	FW103	EWR35D-25SS	FLAT WIRE	
	FW104	EWR35D-13LS	FLAT WIRE	
	FW110	EWR34D-16LS	FLAT WIRE	
	FW851	EWR33D-10SS	CORD	
	JT101	EMV7145-003Z	SOCKET ASSY	
	JT102	EMV7145-003Z	SOCKET ASSY	
	PH101	GP1A52HR	PHOTO SENSOR	
	PH102	GP2S28	PHOTO SENSOR	

■ Ellectrical Parts List (ENN-497)

⚠	Item	Parts Number	Description	Area
		DIODES		
	D701	1SS133	SI.DIODE	
	D702	1SS133	SI.DIODE	
	D703	1SS133	SI.DIODE	
	D704	1SS133	SI.DIODE	
	D705	1SS133	SI.DIODE	
	D706	1SS133	SI.DIODE	
	D710	SLA-580LT70F124	L.E.D.	BS
	D710	SLR-54VC50F124	L.E.D.	C
	D710	SLR-54VC50F124	L.E.D.	EF
	D710	SLR-54VC50F124	L.E.D.	EN
	D710	SLR-54VC50F124	L.E.D.	G
	D710	SLR-54VC50F124	L.E.D.	J
	D710	SLR-54VC50F124	L.E.D.	U
	D710	SLR-54VC50F124	L.E.D.	US
	D710	SLR-54VC50F124	L.E.D.	UT
		CAPACITORS		
	C271	QCVB1CM-103Y	0.01MF 16V CER.CAP.	
	C272	QCVB1CM-103Y	0.01MF 16V CER.CAP.	
	C273	QCHB1EZ-223	0.022MF 25V CER.CAP.	
	C701	QER51HM-475	4.7MF 50V AL E.CAP.	
	C702	QER51HM-475	4.7MF 50V AL E.CAP.	
		RESISTORS		
	R270	QVAB79C-E53CJ5	5K VARIABLE RES.	
	R271	QRD161J-390	39 1/6W CARBON RES.	
	R272	QRD161J-390	39 1/6W CARBON RES.	
	R273	QRD161J-270	27 1/6W CARBON RES.	
	R274	QRD161J-270	27 1/6W CARBON RES.	
	R701	QRD161J-331	330 1/6W CARBON RES.	

⚠	Item	Parts Number	Description	Area
		OTHERS		
		EMW10718-002A	PRINTED BOARD	
	J271	QMS6A40-E20G	HEADPHONE JACK	
	S701	QSQ1001-E01ZJ7	PUSH SWITCH	
	S702	QSQ1001-E01ZJ7	PUSH SWITCH	
	S703	QSQ1001-E01ZJ7	PUSH SWITCH	
	S704	QSQ1001-E01ZJ7	PUSH SWITCH	
	S705	QSQ1001-E01ZJ7	PUSH SWITCH	
	S706	QSQ1001-E01ZJ7	PUSH SWITCH	
	S707	QSQ1001-E01ZJ7	PUSH SWITCH	
	S721	QSQ1001-E01ZJ7	PUSH SWITCH	
	S722	QSQ1001-E01ZJ7	PUSH SWITCH	
	S723	QSQ1001-E01ZJ7	PUSH SWITCH	
	S724	QSQ1001-E01ZJ7	PUSH SWITCH	
	S725	QSQ1001-E01ZJ7	PUSH SWITCH	
	S726	QSQ1001-E01ZJ7	PUSH SWITCH	
	S727	QSQ1001-E01ZJ7	PUSH SWITCH	
	S728	QSQ1001-E01ZJ7	PUSH SWITCH	
	S729	QSQ1001-E01ZJ7	PUSH SWITCH	
	S730	QSQ1001-E01ZJ7	PUSH SWITCH	
	S731	QSQ1001-E01ZJ7	PUSH SWITCH	
	BK701	E306904-001SS	DISPLAY HOLDER	
	CN271	EMV7112-003R	CONNECT TERMINAL	
	CN701	VMC0163-R32	CONNECT TERMINAL	
	CN702	EMV5120-008	CONNECT TERMINAL	
	CN703	EMV7120-008	CONNECT TERMINAL	
	DI701	ELU0001-179	FLUORESCENT DISPLAY TUBE	
	FS701	E306805-134	SPACER	

■ Parts List (XL-F254BK)

* This list describes only difference between XL-F154BK and XL-F254BK.

■ Elctrical Parts List (ENN497)

⚠	Item	Parts Number	Description	Area
		I.C.S		
	IC701	SPS-420-1	INFRARED DETECT UNIT	
		DIODES		
	D707	1SS133	SI.DIODE	
	D708	1SS133	SI.DIODE	
		CAPACITORS		
	C703	QER51EM-106	10MF 25V E.CAP.	
		OTHERS		
	S708	QSQ1001-E01ZJ7	PUSH SWITCH	
	S709	QSQ1001-E01ZJ7	PUSH SWITCH	
	S710	QSQ1001-E01ZJ7	PUSH SWITCH	
	S711	QSQ1001-E01ZJ7	PUSH SWITCH	
	S712	QSQ1001-E01ZJ7	PUSH SWITCH	
	S713	QSQ1001-E01ZJ7	PUSH SWITCH	
	S714	QSQ1001-E01ZJ7	PUSH SWITCH	
	S715	QSQ1001-E01ZJ7	PUSH SWITCH	
	S716	QSQ1001-E01ZJ7	PUSH SWITCH	
	S717	QSQ1001-E01ZJ7	PUSH SWITCH	
	S718	QSQ1001-E01ZJ7	PUSH SWITCH	

■ Accessories List (XL-F154BK)

Block No. M3MM

⚠	Item	Parts Number	Parts Name	Q'ty	Description	Area
	1	E30580-2611A	INSTRUCTION BOOK	1		J
		E30580-2612A	INSTRUCTION BOOK	1		C
		E30580-2613A	INSTRUCTION BOOK	1		EF, G
		E30580-2614A	INSTRUCTION BOOK	1		EN
		E30580-2615A	INSTRUCTION BOOK	1		U, US, UT
		E30580-2616ABS	INSTRUCTION BOOK	1		BS
⚠	2	QMP1E00-183J5	POWER CORD	1		C, J
⚠		QMP39F0-183E	POWER CORD	1		EF, EN, G, US
⚠		QMP5520-1835BS	POWER CORD	1		BS
⚠		QMP7530-183	POWER CORD	1		U, UT
	3	EWP302-011	SIGNAL CORD	1		
	4	EWP805-014	PLUG CORD ASSY	1		
⚠	5	ENZ2202-001	SIEMENS PLUG	1		U, US, UT
	6	E309758-003	POLY BAG	1		
	7	E309758-003	POLY BAG	1		BS
	8	BT-20044G	SAFETY SHEET	1		J
	9	BT-20066A	DISTRIBUTOR LIST	1		BS
	10	BT-20071B	SERVICE NETWORK	1		C
	11	BT-20134	WARRANTY CARD	1		G
	12	BT-51006-1	REGISTER CARD	1		J
	13	BT-52002-1	WARRANTY CARD	1		C
	14	BT-54003-1	WARRANTY CARD	1		BS
	15	E43486-340A	SAFETY SHEET	1		BS

■ Parts List (XL-F254BK)

* This list describes only difference between XL-F154BK and XL-F254BK.

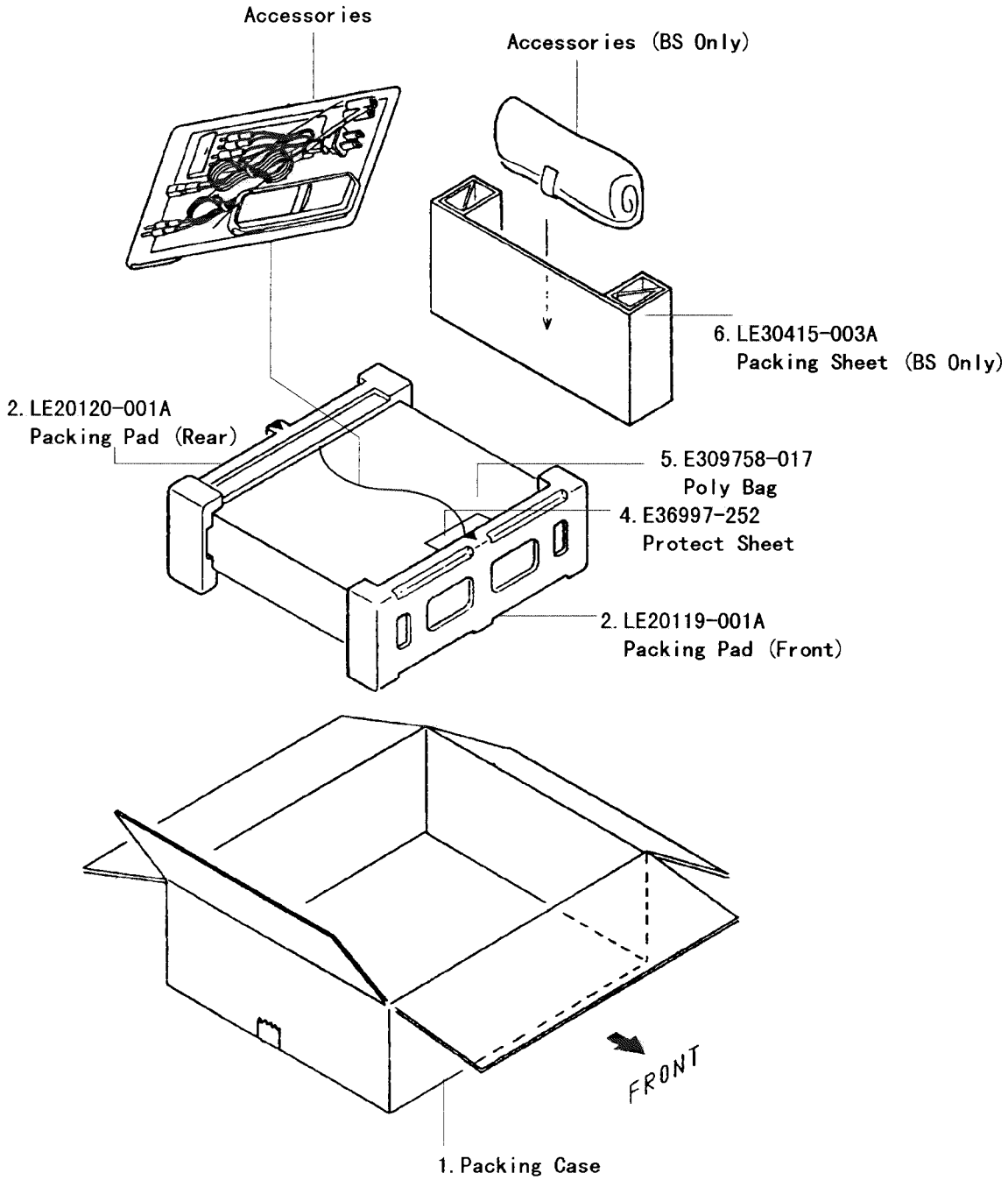
Block No. M3MM

■ Accessories Parts List (XL-F254)

⚠	Item	Parts Number	Parts Name	Q'ty	Description	Area
	16	RM-SX254EU	WIRE-LESS REMOTE CONTROL	1		BS, EF, EN, G
		RM-SX254U	WIRE-LESS REMOTE CONTROL	1		C, J, U, US, UT
	17	R6SPTT-2ST	BATTERY	2		

Packing Materials and Parts Numbers

Block No. M4MM



XL-F154BK	LE20141-029A (C, J)
	LE20141-030A (EF, EN, G, U, US, UT)
	LE20141-031A (BS)
XL-F254BK	LE20141-026A (C, J)
	LE20141-027A (EF, EN, G, U, US, UT)
	LE20141-028A (BS)

XL-F154BK
XL-F254BK

JVC

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